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RAIL-ROAD NEWS.

Tunnel Under the Hudson River at Albany.

Mr. Higham, C. E., has published, in the Albany Evening Journal, his plan for making a tunnel under the Hudson River, at Albany, the cost of which he estimates will amount to $517,720. The following is an outline of the plan:—

Commence the tunnel at a considerable distance from the river with a descent of 150 feet per mile. It is to be made of a brick arch. The whole tunnel is to be made under the river by coffer dams, and sinking iron tubes to turn the arches in them. Across the channel part of the river it is proposed to dredge the river to its proper depth, and to sink wrought iron tubes in which the brick arches will be turned. The tubes are proposed to be built of boiler plates, made in such lengths as may be found practicable. The plates of the tube to be rivetted on ribs of T iron, to give them form and stiffness. The ends of the several lengths of tubes, as they are sunk, to have temporary bulkheads so that the arches through each section may be finished when the joining will be made, by throwing puddling materials on the outside of the tubes, and, when tight, taking out the bulkheads and turning the arches at the connections. The materials for the arches to be taken into the tube by pipes rising above the water.

The form proposed for the tunnel is two circles, connected together by a range of columns; the arches to be of brick, twenty-seven inches thick; the brick to be made for the purpose, of the proper shape; three courses of brick to form the depth of the arch. Where the arches join in the centre, on the columns, will be cast-iron girders. In the bottom of the arches, under the tracks, will be suitable drains to collect any leakage, and a pump at the lowest point (which will be near the pier) for drawing the water from the tunnel. The object of giving this form to the tunnel was to save height, and to lessen the grades entering into it.

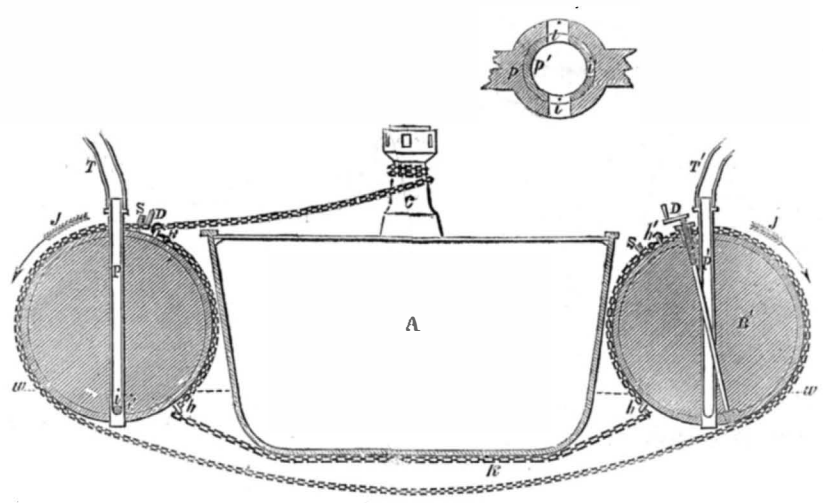
A chimney for ventilation (150 feet high) will be constructed on the pier, at which place will be the permanent draining-pump and the gas works for lighting the tunnel, and the several railroad companies' depots, shops, and grounds. A staircase will also be made on the pier and one on Quay street, to give access to foot passengers into the tunnel. A double track railroad will be made from East Albany to Quackenbush street, where they will connect with the tracks of the several roads leading into the general passenger depot proposed to be erected for all the railroads terminating at Albany, and the freight grounds of the Albany and Schenectady Railroad. In the tunnel will be a sidewalk, neatly railed in, for foot passengers.

If all this can be done for $600,000, it will be the greatest engineering feat ever performed in our country.

On Wednesday, last week, a collision occurred on the Harlem R.R.—3 persons injured.

SUBMARINE ELEVATOR.

Figure 1. **Figure 2.**



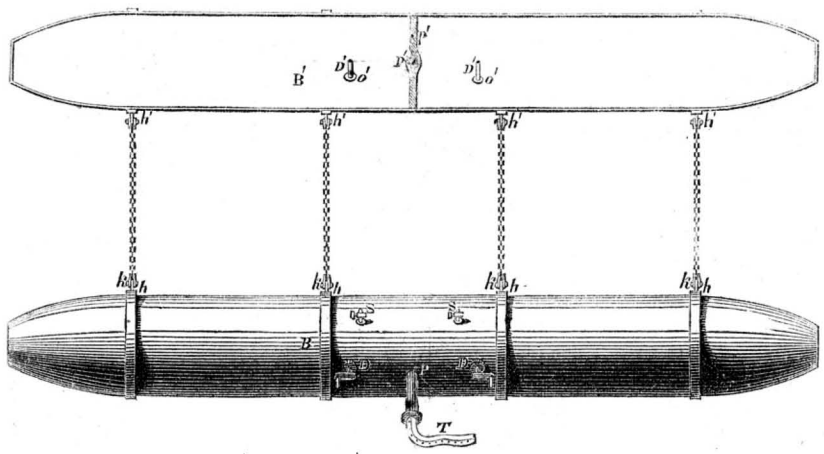
The accompanying engravings are views of the Submarine Elevator patented by the inventor, Mr. Orrillus T. Williams, of Smithland, Livingston Co., Ky., a few weeks ago.

Figure 1 is a cross section; figure 2 is a sectional view of the diaphragm and pipe for opening and closing the apertures; figure 3 is a plan view. The same letters refer to like parts.

A is a vessel intended to be raised; B and B′ are cylinders; P is an injection pipe, and T is a flexible tube attached to it; D D are cranks turning valve rods, D′ D′, working with the screw stuffing boxes to open and close the valves as seen at O′ O′, in the cylinder, B′; *p′* is a diaphragm, in a swelled part of which the pipe, P′ works, opening and closing the apertures, *i i*. The cylinders, B B′, are connected together by hooks, *h h′*, and chains, K; *c* is a capstan, by which chains are acted on, and the two cylinders made to revolve. The direction of the motion of the cylinders is represented by the arrows, *j j*. At S S are screws having broad heads and elastic washers capable of closing, air-tight two vents, the opening of which allow air to escape when the cylinders are to be sunk in the water.

The object of the invention is to raise vessels. The manner of using the apparatus is to sink the cylinders by the vessel, pass the chains beneath the bottom or through the sides as the case may be. This having been accomplished, air is forced through the flexible tubes, and the water in the cylinders, with which they were filled while sinking, is forced out through the apertures in the lower part of the cylinders. The buoyant force of the air—which is equal to the power applied to force out the water and the air in, elevates the vessel. As the cylinders are constructed to have more buoyant power than to raise the vessel merely to the surface of the water, the cylinders are then made to revolve, by which means the chains around the bottom of the vessel are raised up by the cylinders, and the bottom of the vessel is likewise raised above the surface of the water. When

Figure 2.



brought to the required position, it remains so, without liability to derangement. We have seen a certificate from members of the New York Board of Underwriters, that they believe the "Submarine Elevator of Mr. Williams will operate in a satisfactory manner, and they think favorably of its merits." This invention merits the attention of all interested in such matters. More information may be obtained by letteraddressed to Mr. Williams.

Effect of Monotony on Health.

No man for any length of time can pursue one vocation or one train of thought without mental injury—nay, I will go further, without insanity. The constitution of the brain is such that it must have its time of repose. Periodicity is stamped upon it. Nor is it enough that it is awake and in action by day! and in the silence of night obtains rest and repair; that same periodicity which belongs to it as a whole, belongs, too, to all its constituent parts. One portion of it cannot be called into incessant activity without a permanent injury ensuing. Its different regions, devoted to different functions, must have their separate times of rest. The excitement of one part must be coincident with a pause in the action of another. I do not think it possible for mental equilibrium to be maintained with one idea or one monotonous mode of life. There is a necessity for men of great intellectual endowments, whose minds are often strained to the utmost, to fall back on other pursuits; and thus it will always be that one seeks refuge in the pleasures of quiet country life, another in the chase, another in social amusements.—Nay, with all men, even those whose lot has been cast in a more lowly condition, whose hard destiny it is to spend their whole lives in pursuit of their daily bread, with one train of thought, one unvarying course of events, what would become of them if it were not for such a principle as this? Men often say that the pleasures of religion, and of a christian faith, are wholly prospective, and to be realized only in another world.

In this they make a mistake; for those consolations commence even here, and temper the bitterness of fate. The virtuous laborer, though he may be ground down with the oppressions of his social condition, is not without his relief; at the anvil, the loom, or even at the bottom of the mine, he is leading a double existence—the miseries of the body find a contrast in the calm of the soul—the warfare without is compensated by the peace within—the dark light of life here serves only to brighten the glories of the prospect beyond. Hope is the daughter of despair. And thus a kind Providence so over-rules events, that it matters not in what station we may be—wealthy or poor, intellectual or lowly—a refuge is always at hand, and the mind worn out with one thing turns to another, and its physical excitement is followed by physical repose.

Phosphate of Lime in Consumption.

When an account of Dr. Stone's (of New Orleans) success in treatment of consumption was published, it naturally enough interested the profession, as well as the friends of those who were suffering, because it raised a gleam of hope in cases where none existed. The following facts have come to our knowledge, and may be considered favorable in regard to this method of treatment. A gentleman of the neighboring city of Charlestown, whose son was considered in a hopeless state from the diseased condition of the respiratory apparatus, was induced to administer Dr. Stone's medicine. All the phosphate of lime procured at the shops appeared to be imperfectly prepared—being coarse and otherwise objectionable. A purer article was prepared especially for the occasion, reduced to an impalpable powder, and ten grains were administered three times a day, followed by a swallow of cod-liver oil. No material change was discoverable in the patient for two weeks. Suddenly, as it were, a fixed pain of long standing in the chest then abated; sleep became refreshing the appetite improved, strength returned, and from being moved about the apartment reclining on an invalid chair, he is now daily riding on an average, ten miles on horse-back, facing the wind and breasting the cold with impunity. This is a synopsis of a case ralated by a grateful parent, who would be glad to have others, under similar circumstances, make an effort with the phosphate, combined with cod-liver oil.—[Boston Medical Journal.

Disease Propagated by Bank Notes.

A work, entitled History of Epidemic Cholera, has recently been published by Dr. T. H. Buckler, physician to the Baltimore Almshouse, in which he alludes to the propagation of disease by means of banknotes:—"The inmate of a small-pox hospital generally keeps what little money he may chance to have about his person. If he wants a lemon, he sends a note saturated with the poison, and having, perhaps, the very sea-sick odor of small-pox, to a confectioner, who takes it, of course. It would be impossible to conceive of any better mode of distributing the poison of a disease known to be so contagious and infectious. It could hardly be worse if so many rags ware distributed from the clothing of small-pox patients.

By our Eastern papers we learn that the boot and shoe trade is very dull, and that the prices for labor have been greatly reduced. Many of the shoemakers, it is said, are making tracks for California.

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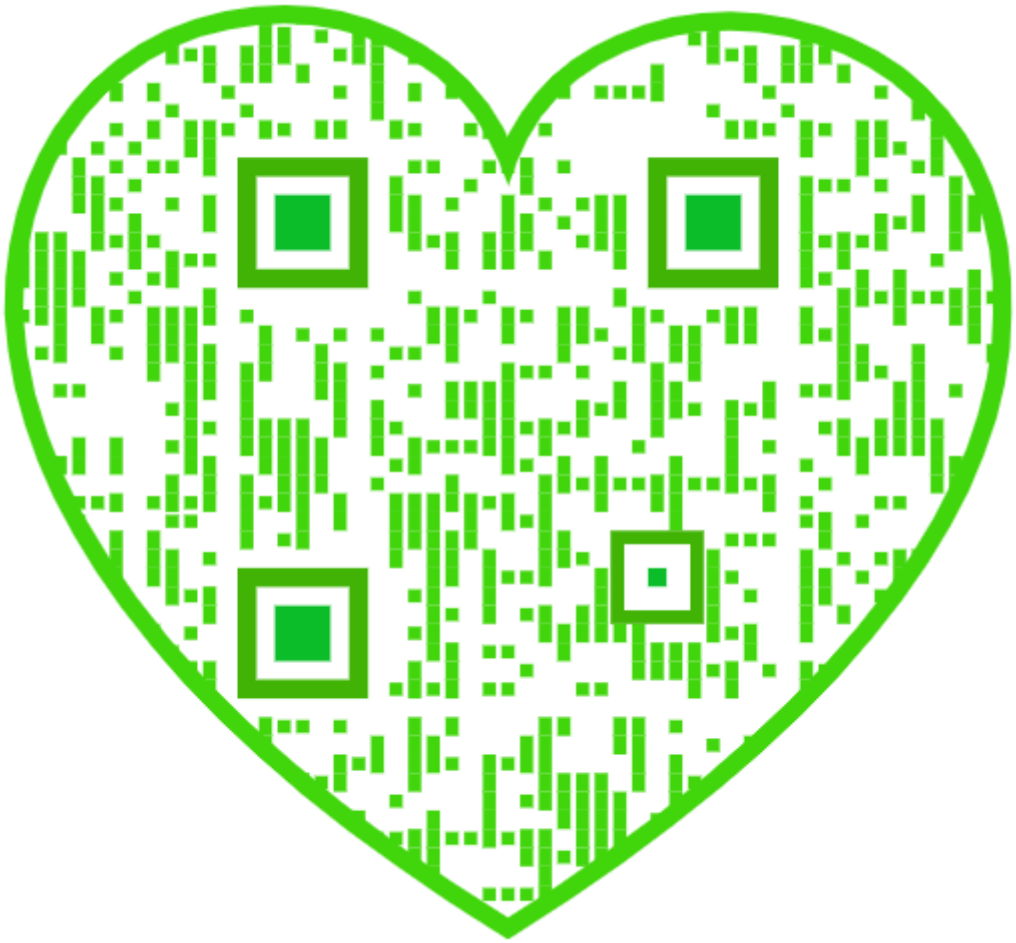

MISCELLANEOUS.

(For the Scientific American.)

Those Forces.

The criticism of my article on motion, by Mr. J. B. Conger, requires a reply, for either he is or I am in a fog; and I do not wish to lead your readers astray, nor to wander in obscurity myself; and therefore place any person who corrects my errors in the list of my friends. But I have yet to see error in the present instance.

It is freely acknowledged that there is no essential difference between a force that produces uniform and another that produces accelerated motion. The difference is in the effects which forces produce, and the adjectives "constant" and "impulsive" were prefixed to the noun "force," in conformity with scientific usage, to distinguish between those effects. If Mr. C. throws a body, moving his hand with a uniform velocity while holding it fast, his hand exerts an impulsive force on that body; for it does not add any force or motion to the body, after the initial effort. But, if he increase the motion of his hand while it moves with the body, he exerts a constant force upon it, so long as the contact lasts —but the instant it leaves his hand, the body continues moving with a uniform velocity, which is equal to the final motion of his hand, and the distance the body passes over is found by multiplying the time of the body's motion by the distance it moves during a unit of that time, a second, for instance. Again, if a meteor were to fall from the sky toward the centre of the earth, through a space of 2,000 feet, and if, after it had fallen 1,000, impelled by the constant and accelerating force of gravity, the law of gravitation were suddenly annihilated, it would continue moving uniformly over the other 1,000 feet with the velocity it had acquired at the instant when gravitation ceased to act. In this case the meteor would be impelled by a constant force, producing accelerated motion through the first half, and by an impulsive force, producing uniform motion, during the second half of its course. Hence, the final velocity produced by a constant force may be regarded as the initial velocity of an impulsive force from the instant when the former ceases to act, because nothing is afterwards added, either to the momentum or to the velocity of the moving body, whose motion is thenceforth regulated by the law of inertia.

The velocity of a body moving uniformly may be found by either of the following theorems:—Divide the distance passed over by by the time of motion; or, divide the force which produced the motion; or the momentum of the moving body (which are always equal, because no body can communicate more force or momentum to another body than it possesses) by the weight or quantity of matter contained in that body. These are all the rules by which the velocity of bodies moving uniformly can be determined. I do not pretend to understand Mr. Conger when he says:—"Multiply the time of action, by its intensity into the mass acted on, and the velocity will result in all cases." The terms, "time of action" and "intensity," are not defined by any authorities within my reach; but, if by the former he means the time a motive force acts, and by the latter the amount of that force, as ascertained by the pressure a body of a given weight incumbent upon another, would exert —I do not hesitate to declare that his rule is utterly erroneous. Hutton's Mathematic, the New Encyclopædia Brittanica, and that of Edinburgh, give, each, all the possible combinations of formulæ relating to motion, both uniform and accelerated, and his rule is not found among any of them. The product of the velocity and weight (mass) of a body, is the momentum in all cases.

Between every two successive forces there must necessarily be an interval, else they are not successive, but one continued, a constant, force. Gravitation is, in this sense, a constant force, and so are water continually issuing from a penstock, and the wind striking the sails of a vessel with a uniform force. The bodies of solar systems move in a non-resisting medium, and I repeat, that if a body were thrown from the surface of one of these bodies, in the direction of a tangent to its surface, by an impulsive, or, if Mr. C. prefers the term, by a projectile force, properly proportioned to the respective quantities of matter (masses) contained in the two bodies, the one of least mass would become a satellite to the other; and, if the former moved in a circular orbit, its centrifugal and centripetal forces would constantly balance each; and the force with which it would strike a body in its orbit, would be equal to the difference between the projectile force and that with which it tended to recede from, or fall upon the central body. The reason why a person, whirling a body round his head with a string, must maintain a constant force upon it, is because it moves in a resisting medium, the atmosphere, and is at the same time drawn towards the centre of the earth by the unremitting force of attraction. Mr. Conger's idea to "leave the writer [me] to start a vessel to sail round the wind," is more witty than shrewd, indicating thought without reasoning.

Mr. Conger says, "there is no such force as centrifugal." Indeed! Then let Mr. Conger assign a reason why the secondary planets have not fallen upon their primaries long ago, and these, with them, upon their central suns. I agree with him that you can make nothing of it, for the simple reason that it is only a small part of the motive force which is necessary to produce circular motion, and without producing this, it could not be generated at all; and all that part of the motive force with which the body, moving in the circle, would strike an obstacle, is necessarily lost; for it is, I believe, only the centrifugal force which Mr. Andrews claims as his available motive power. All bodies are perfectly indifferent to motion or rest; so much so, that if any body could be placed in a position where it could be neither repelled nor attracted by any other body, it would always remain at rest; and, if it were then propelled in any direction, by any force, it would forever continue moving with the precise velocity it had acquired at the instant when the motive force ceased to act upon it. The Latin noun *vis* (force) prefixed to the anglicised noun inertia, is therefore perfectly inapplicable, and excellently calculated to lead the tyro Philosopher astray.

Mr. Conger says:—"So Esq. Andrew's machine is no humbug after all! Mr. Schetterly has given him all he wants—a force equal to that with which a body in circular motion strikes. For I understand him to suppose that the centrifugal and striking forces are equal; and as the striking force will always equal the impulsive force, whatever the amount of the centrifugal force is, must be clear gain—which we hand over to Esquire Andrews." Again: "If the sun should lose its attractive force, and the earth fly from its orbit with a velocity increased by the centrifugal force, how much faster would it move than it now moves in its orbit? Not any; for there is no such force as centrifugal,"—&c. I am almost surprised that a philosopher should heap together such a mass of groundless assumptions and jumpings at conclusions; and notwithstanding they are all impliedly confuted in my article on Motion, I proceed to gratify Mr. C. —not by estimating, but by calculating the centrifugal force, etc., in an assumed case, which will enable him to calculate in any other case, when the necessary data are given, and he will find that neither he nor I have an iota of motive force left to hand over to Esq. Andrews, after compensating him for the force necessary to maintain circular motion.

Supposing the earth were a globe without any eminences on its surface, and its diameter 41,774,000 feet, and that an iron ball, weighing two tons, were projected in a tangent to its surface, 16½ feet above the earth's surface, which is nearly the distance through which bodies fall near her surface, in one second; then, by multiplying the above diameter by the force of gravitation (16½ feet), and extracting the square root from the product, we have 25,920 feet, which is the distance through which the iron ball must pass every second in its orbit around the earth, so that the centrifugal force may exactly balance the centripetal (the force of gravity), and the iron ball become a satellite to the earth. Now, by a rule given above, the momentum (force) with which the ball would strike a body in its orbit, is to the momentum with which it would strike the earth's surface, as 51,840 is to 32 1-6; that is, the striking force in the orbit of the iron ball would be nearly 1612 times as much as its centrifugal force, omitting decimals; and the projectile force required to set the ball in motion, or with which it would strike a body in its rectilinear path, one second after the force of gravity was annihilated, would be equal to the sum of the two forces, i. e. 51,8716 1-2 tons. Where then is the force to be handed over to Mr. Andrews, seeing he must lose either the orbital or the centrifugal? Would it not be preferable to employ the former in the old way, and lose the latter? And even if he could employ both, he would get no more power, available to move machinery, than he must necessarily employ to set his force-generating machinery in motion, even if he could, God-like, obviate the passive but constant power of friction and resistance of the atmosphere. If "there is no such force as centrifugal" created by inertia in circular and orbital motion, pray what was it that ruptured grindstones and heavy cast-iron balance wheels, throwing off pieces that demolished solid walls, in consequence of their too rapid motion? Perhaps Mr. Conger may still dispute the fact, that of two bodies of equal weight, and impelled by the same amount and duration of force, the one in a right line and the other in an orbit, the former will move faster than the latter. But he ought to remember that, in case of the weight and string, the hand exerts exactly as much force to retain the weight in its orbit, as the weight exerts to fly from it in order to move in a rectilinear tangental path; and that it is precisely in proportion to this force, that the orbital motion is restrained. I have carefully re-considered my article on motion, and find no error in it, except the omission of stating that when a body moves in an orbit, in a resisting medium, and is at the same time powerfully attracted by another body near it, as in the case of the string and weight, the projectiles and centripetal forces must both be constant; and that the two forces must act simultaneously and in angular directions.

Also, when of two bodies, one revolves around the other, in free space, the central one will contain the greatest quantity of matter; and both describe orbits, whose respective dimensions will be proportional to their respective orbits. But, in case of a wheel in motion; and even in case of a weight whirled with a string, the centre of motion is fixed. Though all these principles are necessarily involved in my article on motion, it seems some persons do not understand it. A man could not put a mill stone round his head, because a mill stone is heavier than he and would carry him off in a tangent.

I hope Mr. Conger will not be offended by my calling his attention to his own peroration.

H. R. Schetterly.

Howell, Mich., Feb. 21.

New Illuminating Apparatus for Lighthouses.

We learn by the Providence (R. I.) Journal, that Mr. George F. Wilson, of the Atlantic de Laine Mills, in that place recently gave an interesting lecture before the Providence Franklin Society, upon the Illumination of Lighthouses, in the course of which he explained an apparatus invented by himself and Dr. Meacham, of Cincinnati, which appears to be a most excellent invention. The improvement is a combination of the dioptric and catoptric methods of illumination. The lamp and reflector is thus described by the Journal:

"The lamp, which is of great illuminating power, has three concentric wicks, the diameter of the larger being two and three-fourths inches, with a separate oil chamber for each, and to which, by a simple arrangement of the conveying tubes, the oil is carried and constantly kept at its proper level, thereby dispensing with the rack-and-pinion for raising the wicks, as well as all the clock-work and pumps heretofore found indispensable in lamps of this kind.

The reflectors, which are arranged both above and below the light, are constructed upon a die, the form of which is obtained by the revolution of a parabola around an axis perpendicular to its own, and passing through its vortex; and the diameter of the lamp and the focal distance of the reflectors are so graduated to each other, that the most luminous portion of the light shall always be in this universal focus.

To prevent the escape of any radiant light, a cylindro-plano-convex lens, having the same common focus, is placed between the middle and lower reflectors, which transmits and refracts it in a line parallel to a horizontal plane passing through the light. By this arrangement all the light evolved is thrown out in a horizontal belt, and is equally luminous or brilliant at all points. The whole apparatus, which pleases all who have seen it by its exceeding simplicity, will not cost more than $300; and while it would produce a light many times more efficient than the best catoptric apparatus now in use, it would save to our government more than $100,000 annually."

On the Separation of Silver.

In a recent communication made to the Academy of Sciences of Paris, MM. Malaguti and Durocher show that all the metallic sulphurets and arseniurets, properly so called, decompose a certain quantity of chloride of silver. This decomposition is effected more or less slowly when the contact is made with dry salts, but it is accomplished more rapidly, and in some cases even instantaneously, when the chloride or bromide of silver is in solution:—

100 parts sulphuret of zinc		decompose	3 chloride of silver
" " "	cadmium	"	14 do.
" " "	bismuth	"	2 do.
" " "	lead	"	5 do.
" "proto-sulphrt.	tin	"	1½ do.
" "bisulphuret	tin	"	30 do.
" "proto-sulphrt.	copper	"	360 do.
" "arseniuret	antimony	"	120 do.
" " "	cobalt	"	166 do.

All pure metallic sulphurets possess the property of decomposing, under determinate conditions, a given quantity of chloride of silver, and even other insoluble chlorides. This property appears to be modified in certain cases by the molecular state of the substances. The decomposition of the chloride of silver may be effected by double decomposition, by reduction, or by reduction and double composition together.

Mammoth Steamers.

We see it stated in the London Times, that a proposition is on foot to build iron steamers of 720 feet in length, 90 feet beam, and 36 in depth, with four engines of 1,000 horse-power, and a screw, whilst there will be eight masts, with huge latteen sails. The vessels are to be built of iron, and will be not only shot but fire proof, and, from the novel method, though simple, and for strength known to every schoolboy, their immense length renders them more safe than those of smaller construction. It is calculated to carry 2,000 passengers, with a theatre for amusements, &c., and could, in case of war, open a battery of 300 guns. This projected scheme is for the purpose of bringing the English colonies within a month's reach of London, but it is altogether too large an affair. The only short way of bringing England's colonies nearer to London, is to give them the best system of government possible for their interests.

Building Associations.

It is supposed that there are no less than 100 building associations in the cities of New York, Brooklyn and Williamsburg. These associations have enabled many working men to build houses for themselves, which otherwise they would not have been able to do. They are good objects for the amelioration of the condition of working men.

Notice---Communications.

We receive a great many communications on the one subject, the majority containing nearly the same ideas; we can only publish one or two of such. We have frequently such a pile of communications on hand that we cannot, for some time, give place to those we have set aside for publication. The communications which come to us, are not like those which frequently come to the mere newspaper, which, from their nature are treated with disrespect—our communications are all respected.

No antidote is known for the poison of mushrooms; an emetic is all that is prescribed with any hope of success; if early administered it may do good.

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The Municipal Fire Telegraph.

The purpose of a Fire and Police Telegraph is to connect the various parts of a Municipality by an intelligent and co-operative law. To accomplish this it has been found necessary to adopt, for the municipal body, the precise arrangement which is found in the nervous system of the individual.

Thus, in the Fire Telegraph, now approaching its completion in Boston, there is a Central Station, which is the "brain," the common reservoir of nervous or electric force for the whole system, at which all the batteries are placed, and which is presided over by an intelligent will (the watchman or operator of the Central Station). From this centre radiate two classes of electric conductors or nerves (the iron wires carried over the houses.) The first of these, the "Signal Circuit," conveys impressions to the centre, is "afferent," "sensitive," to adopt the language of anatomy. The second of these, the "Alarm Circuit," conveys impulses from the centre, is "efferent," "motor." When any disturbance or alarm occurs at the circumference or other part of the system, it is signalized from the "Signal Boxes," which are scattered throughout the city, and which are the "sensitive extremities" of the sensitive conductors, to the Central Station, from which, after an act of intelligence and volition by the operator, an impulse to appropriate or corresponding action is sent over the "motor" nerves or conductors to the various belfries, where the electric or nervous agent animates iron limbs by means of the contraction of electro-magnetic muscles, thereby releasing powerful machinery to strike a single blow with each of the tolling hammers. By a combination of such blows, by the intelligent act of the presiding will at the Central Station, distinct signals, or any others may easily be struck.

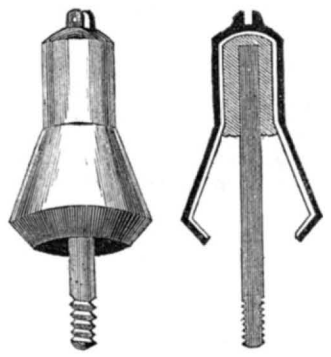
This presents at once an outline of the Municipal Fire Telegraph. The analogy with the living system has been thus wittily stated by the editor of the Boston Commonwealth: "Suppose a live coal drops on your toe: the nerves of sensation give an instant signal to the brain, that is, a feeling of pain. The brain then, by an act of will, conveyed to the muscles along the leg by the motor or alarm nerves, rouses the said muscles to their duty in the case, and the result is, that the coal is kicked off. The municipal fire-alarm arrangement is conducted on this very plan." The perfection of this analogy is a guaranty, in addition to the various ends of security and intelligent action which are thus obtained, that the arrangement is in conformity with a natural law.

A chief peculiarity of the Fire Telegraph, as a mechanical system, will be seen at once from the sketch above given. It developes the motor functions of the electric circuit, at a distance. Hitherto the telegraph has been chiefly used to convey intelligence, which is its sensitive function. Its application to the development and control of power at a distance, either by its own electro-magnetic energy, or by bringing into action other machinery, which is its muscular or motor function, is to give a wide extension hereafter to the uses of the agent—electricity. In the fire system both of these vital functions of the telegraph, so to speak, are employed, and also related to each other in their natural order. In proportion as civilization advances, the telegraph is thus to constitute the nervous system of organized social life, relating all the parts and making possible a more perfect co-operation than could otherwise be obtained.

The Municipal Electric Telegraph, applied to purposes of Fire and Police, was first described in its general principles by Dr. Wm. F. Channing, in 1845. In 1848 its adoption was recommended by Mr. Josiah Quincy, Jr., the Mayor of Boston, and some experiments were made. In 1851 an elaborate plan was finally presented by Dr. Channing to the Government of that city, which was adopted, and is the basis of the system which has been constructed and successfully tested, though not as yet publicly introduced in Boston. The present mechanism and arrangement of the system have been elaborated by Dr. Channing and Mr. Moses G. Farmer, the able Superintendant of Construction, to both of whom, herefore, the system in operation is justly to be ascribed.

We shall now proceed to describe the System in its various parts, and with its essential safeguards. The conditions by which permanent electric conductors may be established in a city, is the subject of first importance for all applications of the Municipal Telegraphs. This may be effected by the following means: 1st, by employing large wires (No. 8) of the best quality of Swedish iron. 2nd, by attaching them to the brick-work of buildings in the most substantial manner, by means of wrought-iron brackets, holding the insulators. 3rd, by selecting public buildings on lofty isolated buildings, as points of attachment. 4th, by using as long stretches as is consistent with entire safety, say from 200 to 400 feet. 5th, by using duplicate wires, following different routes, between each and every station; (in exposed situations even triplicate wires may be employed.) 6th, by avoiding the use of the ground as any part of the circuit. It is well known that the telegraph wires in our cities are very permanent. With proper guardianship and means of testing, a system of duplicate wires, constructed with the above precautions, cannot be interrupted under ordinary circumstances, by chance or design.

The insulater used in the Boston system is Batchelder's patent (which is advertised in the Scientific American), and is here represented.



The cast-iron cap is represented by the black line in the section. This is lined throughout with glass, by the operation of blowing, or with porcelain. The shank is then introduced with a hot mass of glass or any fused or semi-fused material, by which it is firmly fixed in its place. This is represented by the shaded portion. Between the lower edge of the cap and shank, in the section, there are four inches of glass surface. The re-entering angle of the lower part of the cap protects the glass within from missiles, and is calculated, in a storm of wind and rain, to drive the latter downward, and thus preserve the insulation. The wires pass over the top of the insulator. The shank, which should be longer than is represented, screws into a bracket or the ridge-pole of a house.

Instead of wires insulated above the buildings, they may be buried in tubes under the streets of cities, though at a great increase of expense. In Boston the wires erected (about fifty miles in length) have cost less than a hundred dollars per mile, though a plan of erection, which would cost $150 per mile, is recommended by Mr. Farmer, for future constructions. The mode of erecting wires which has been described, applies to all the forms and uses of the Municipal Telegraph, amongst others to that of furnishing uniform time to a city.

At every station (sixty in number in Boston) dischargers for atmospheric electricity are provided, by presenting points, connected with the ground, in close proximity to the conducting wires.

The circuits of the Fire System are divided, as already stated, into those of "Signal" and "Alarm,"—the one conveying intelligence *to* the central station, the other conveying the impulse to mechanical action *from* the central stations to the hammers of the alarm bells. In the Signal Circuit the battery may be either constantly on or off, the signal being made in one case by breaking, in the other by completing the circuit. Unless the wires are erected with very great care, the "closed circuit" arrangement is decidedly preferable. In this case the duplicate wires between each of the signal boxes on stations, diverge so as to resemble, in the whole circuit, the links of a chain. The signal here is made by breaking the circuit at any one of the signal boxes. Where the open circuit is used, the positive and negative wire is brought to each signal box, and the signal is made by a cross connection between them. The principle of duplicate conductors is preserved by letting each positive and negative wire form an entire circuit, and return to the pole of the battery from which it started. Each signal station is, therefore, connected with the battery at the central station, by wires following two different routes.

The alarm-bell circuit is arranged like the open signal circuit, and the power of the battery is only thrown upon it when the bells are to be struck.

In large cities great economy and security is obtained by increasing the number of circuits of each kind. Thus, in Boston, there are three signal and three alarm circuits to different parts of the city, which come in separately to the central station, and which may be kept and used entirely distinct.

In case of fire, the operation of the system begins at the signal box or station. Of these there are forty in Boston, distributed at distances of one hundred rods apart. They are so constructed that police communications may be had backwards and forwards between each of these stations, and the centre, in addition to their function of signalizing an alarm of fire. By a similar coincidence, a Fire and Police Telegraph has been constructed in Berlin, Prussia, at the same time with that in Boston: this resembles simply the signal circuit and apparatus of the Boston system, but has not the novel and remarkable feature of the latter—the motor or alarm circuit, by which the bells are struck. In Berlin the public alarm continues to be given in the ancient mode, by blowing horns. It is stated that in Berlin there are forty-six signal stations for the private communications of the police and fire department, connected with the centre.

[We shall conclude this article next week.]

Forces---Scientific Terms.

Many misunderstandings arise, owing to the latitude which philosophic authors have given to terms, and this appears to us to be the case with the discussion between Mr. Conger and Mr. Schetterly about Forces. The greatest care should be exercised in the use of terms by authors of philosophic works. *Momentum* is a term used to convey an idea of the quantity of force in a moving body. This quantity consists of the mass multiplied into the velocity, and that velocity is known by the time the moving body takes to pass through a certain amount of space in a certain amount of time, such as 40 miles per hour. But momentum is not force; force is a principle about which we are ignorant; we know that it exists by its effects. Many mistake the operations of force for the principle itself, and this was the error of the "centrifugal-force-from-nothing" philosophers. Mr. Conger and Mr Schetterly are too well versed in philosophy to make such a mistake, but they have used terms like all authors on works of mechanics, and to this we wish to direct attention for a few moments.

We recognize two forces in the physical universe, viz., "attraction and repulsion," and these terms should always be used to impart an idea of the operations of bodies under certain conditions, not the principle of force in the bodies. There are *centripetal* and *centrifugal* forces recognized in Mechanical Philosophy, but there are no such forces in existence. Centripetal force is a term used to convey an idea of the action of one body on another, viz., an attraction to a centre: the other term, centrifugal, is one used to convey an idea of a body repelling or resisting the centre attraction. By these scientific terms we understand the direction in which bodies, so acting upon one another, will move, but that is all—direction is not force.

When we see a ball, weighing one pound, projected upwards from a cannon, we see that piece of metal acted upon by a repulsive force. When we see the same ball describe a curve, and at last come to rest on the lap of mother earth, we have seen it acted upon, secondly, by an attractive force; but these two terms only serve to give us an idea of the action of force, not what force is. If there was only one globe in the universe, in motion, the size of the sun, and it were all composed of pure iron, gold, or any simple substance, it might drift on forever through space, with great velocity, in a straight line, but the terms attractive, repulsive, centripetal and centrifugal, forces, would be like cyphers without a unit, and yet who can deny but that the said globe of metal would be possessed of a great force, as we understand it? We call steam power a repulsive force, because it acts by expansion; we call water an attractive power, because it acts by gravitation; but what does any man know of the chemical principle of expansion, or who can tell what gravitation is?

We know that there is such a thing as electricity, but what electricity is we know not. We know that water is composed of two gases—oxygen and hydrogen; but when we ask the question, what is the gas oxygen—what is the gas hydrogen? we can go no further, we have attained to that limit beyond which the human intellect cannot go; here we must pause—the wide, the unbounded prospect lies before us, but darkness hovers o'er it. The most learned men, and the best read among us know how true the words of St. Paul are, "he who thinketh he knoweth something, yet knoweth he nothing that he ought to know."

We regret, exceedingly that so many authors of philosophical works have mistaken terms for things, and the operations of bodies for properties. Two weeks ago we received a letter from a correspondent, with some quoted but rough verses, which embraced the sentiments, "how could there be a God before time began." Now this is an evidence of that want of deep and correct thinking which characterizes many philosophic works so named, for there is no such a thing as *time;* it is a mere term to convey an idea of a succession of events. There is certainly something in a name; a wrong term conveys a wrong idea and is calculated to lead to misunderstandings.

Recovering Gold from the Alkaline Cyanide.

Evaporate the solution to dryness, powder the residue, and mix it with an equal bulk of litharge. Place the mixture in a Hessian crucible, and heat it to a bright red. By this operation, one part of the oxide of lead is reduced to the state of metallic lead, which unites with the gold, and forms with it a fusible alloy of great weight, which remains at the bottom of the crucible. When the crucible is cool, break it and separate the metal from the scoriæ, treat it with pure nitric acid diluted to sp. grav. 1·2 and heat. The whole of the lead will be dissolved as nitrate of lead; and the pure gold, in the shape of a brownish yellow spongy mass, remains unattacked by the acid. This process is only applicable to the solutions of gold prepared with the alkaline cyanide.

New Jersey Zinc Manufactures.

We had the pleasure, on last Saturday, of meeting with the members of the New Jersey Legislature and a number of gentlemen of the press, and others belonging to New York, and visiting the zinc works of the New Jersey Zinc Company, at Newark, N. J. We examined the work from end to end, and derived both instruction and pleasure from witnessing the various processes through which the rough zinc ore undergoes until it comes out in snowy-white paint, far surpassing any carbonate of lead. After examining the works, a fine dinner was served up to the company at Wykoff's Hotel. Col. Curtis, President of the Company, presided with grace and ability, and many able speeches were made. We will describe the process of reducing the zinc ores and making the paint, next week. It is a subject of very great interest to our whole country.

Cultivation of Basket Willow.

Considerable attention is beginning to be paid to the cultivation of basket willow in the United States. The annual importation of the article into our country amounts to $5,000,000, and this, large, as it is, does not satisfy the consumption. The supply is derived from France and Germany mainly, and costs here from $100 to $180 per ton weight.

A number of ladies and gentlemen of Boston have subscribed $100 each, to purchase, in Paris, a complete set of anatomical and physiological instruments for the New England Female Medical College.

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NEW INVENTIONS.

Improved Railroad Brake.

Mr. E. G. Otis, of Bergen, Hudson Co. N. J. has taken measures to secure a patent for an improved Railroad Brake. He employs a cam on a long rod or lever, which cam acts upon a bar connected with a toggle joint, by the operating of which, a collar, fitting loosely on one of the axles, is thrown in or out of gear with the axle by means of a clutch. A chain attached to the collar, which is also connected to a lever, causes the brake shoes to act against the wheels by the operation of the rod on which the cam spoken of is placed. The brake is a powerful one, and acts instantaneously. There is also a cap friction brake for acting on the wheels by turning the rods in a contrary direction, so as to arrest the cars when instantaneous stopping is not required. In a train of cars there are several rods connected by compensating joints, which allow of the lengthening and contracting of the space between the different cars. The trucks are so constructed also, that if an axle gives way, the wheels are prevented from running off the track by having strong guards placed on each side of them. The trucks are also supported from the car bed, so as to prevent smashing if a wheel breaks.

Improvements in Truss Girders for Bridges.

Mr. Dudley Blanchard, of the city of Troy, N. Y., has taken measures to secure a patent for a system of trussing and bracing of bridges, whereby much weight of metal (if a metal bridge,) and much weight of wood is saved. Every one of the several braces of the truss is made of a strength proportioned to the amount of the burden it is required to bear. The top chord is so constructed that its capacity for giving the lateral support to the top ends of the braces is proportionate at every part of its length, to the amount of such support it is required to give to sustain the burden. The lower chord is constructed upon the same principle.

Fowl Feeder.

Mr. S.W. Albee, of Walpole, Cheshire Co., N. H., has taken measures to secure a patent for an apparatus for feeding fowls. Within a suitable case there is enclosed a hopper and feed boxes; the case has doors hung and arranged with levers in such a manner that they may be opened by the fowls as they alight or tread upon steps which are connected to the leaves of the doors. The grain is placed in the hopper within the case, and falls from thence into the feed boxes, the supply being regulated by slides. When the fowls leave the steps, the doors close by their own gravity, and when the doors are opened by the fowls alighting on the step, they obtain the grain from the feed boxes which are placed within their reach. When it is desired, the fowls are prevented from opening the doors by turning or raising up the steps. Thus the fowl feeder preserves the grain from vermin and filth, as it is enclosed within the case; much waste is also prevented and the fowls can feed themselves at pleasure. It is a valuable invention for farmers.

Improvements in Roofs of Buildings.

Mr. William W. Bratt, of Granville, Washington Co., N. Y., has taken measures to secure a patent for an improved mode of jointing metal plates for roofs, which is applicable to all kinds of metal, and which, without any soldering or bolting, makes a tight roof, by the way in which one plate is made to lock into another.

New Breech-Loading Rifle.

Mr. Albert G. Bagley, the famous maker of gold pens, has invented one of the most handsome and original breech-loading rifles that we ever saw; it is unique; the breech chamber is quite different from any that we have examined. It loads down the breech, which answers the purpose of a loading muzzle. The breech chamber is pushed into and out of the barrel by the turn of a screw. The nipple for the cap lies horizontally, and altogether it is a most capital invention. We had thought there was no room for improvement in breech-loading rifles; but who can set bounds to the inventors of this world?

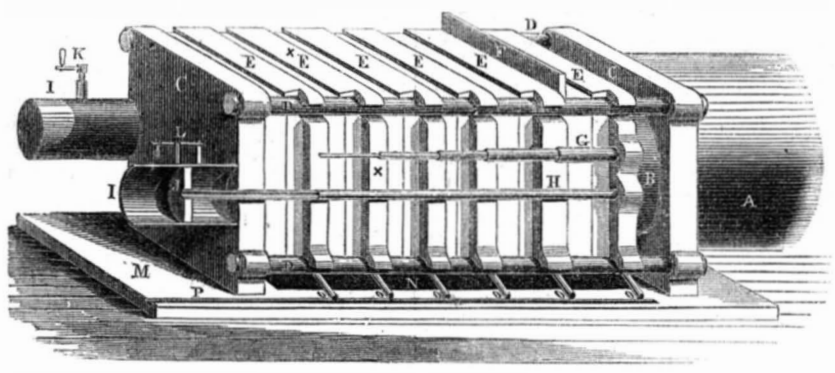
Improved Candles.

The Terre Haute Express, (Ind.), speaks very favorably respecting the *pure lard candles*, manufactured by Mr. B. M. Harrison, of that place. About another kind of candles the Express says:—

"Mr. Harrison showed us, also, a sample of his make of lard candles, which surpasses anything of the kind we have ever seen. They have the appearance of wax, are smooth and glossy, and nearly clear enough to show the wick. To the finger they feel like wax, and we understand they will hang in the sun in the hottest summer days without melting."

We rejoice to hear of any improvement made in candles, for assuredly there is room for it. The kind sold in this quarter of the world is poor soft, and miserable stuff.

LATOURETTE'S PATENT OIL PRESS.---Figure 1.

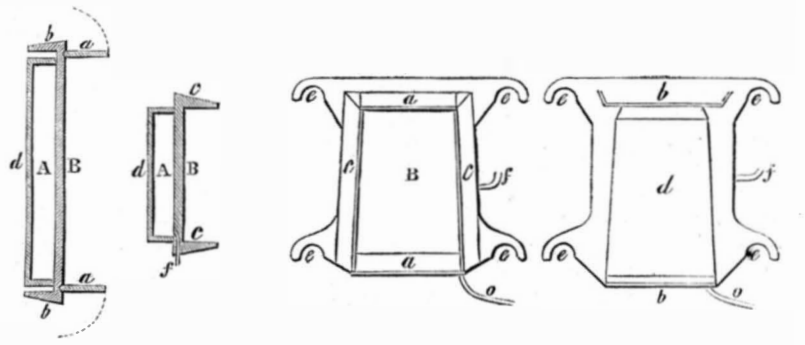


The accompanying engravings represent the improved Steam Heated Horizontal Hydraulic Oil Press, of D. L. Latourette, of St. Louis, Mo., which was patented on the 28th of last October. The press is for manufacturing linseed, castor, and other oils.

Figure 1 is a perspective view. Figure 2 is vertical section of the truss. Figure 3 is a longitudinal section at *x* figure 1, of the truss. Figure 4 are side views of the truss.

A is the hydraulic cylinder; B is the ram; C C are head pieces connected by the bolts, D D, and forming the main pressing case; E E E E E E are the trusses, with a recess for the substance surrounded by steam; F is the lid of the truss, raised ready to receive the charge. The bottom of the truss opens downwards, so that the cakes pass out below. G are the pipes, which communicate with their respective trusses, and work into each other through stuffing boxes, providing for the extension or contraction of the trusses, as they are moved forward, or made to retrograde on the guide rods, by the working of the press. H is a hollow piston-rod communicating steam to the first truss, and by means of piston J, carries back the ram and trusses, when the hydraulic pressure is taken off; I I are steam cylinders in which piston J works; K is a throttle valve where the steam from the boilers is let on to the press; L is a safety valve regulating the pressure and temperature of steam in the trusses; M is a bed-plate on which the whole rests; N is an opening in the bed-plate through which the cakes are discharged into the basement story; O O O O O O are pipes through which the oil is discharged into trough, P. The steam is kept continually on the press whether working or stationary; *a a*, in the section figures, is the top and bottom of the truss, which open and close as shown by the dotted lines, figure 2; *b b* are the caps of *a a*, to keep them firmly closed; *c c* are the sides of the truss, *d*; *e* are the brackets spanning the bolts, D D; *f* is the pipe for steam. It is attached to pipes, G; O O are pipes where the oil is discharged. The truss is lined with wrought-iron plates, which

Fig. 2. **Figure 3.** **Figure 4.**



are perforated opposite channels which deliver the oil on the lower cap, *b*, which is guttered thence into pipes O.

The patentee of this press is a practical worker in oil, having devoted many years to the business; and this improvement is the result of his observation and experience. Its advantages over all other machinery for the purpose, will appear obvious to every experienced oil manufacturer, as it secures a perfect and uniform temperature to the substance while pressing, until the oil is thoroughly extracted—thus securing a considerable quantity of oil over any machinery now in use. Besides, it saves greatly in labor, no handling of the substance being necessary, and turns out a given amount of work with unprecedented despatch. The press here shown is of one thousand tons pressure, and will work off five hundred bushels bulk per day. One man will work the press, charging and discharging—charging at the top through spouts—and the cakes and oil are discharged in the basement. The cakes are thin and oblong in shape, and six in number, and are filled, pressed, and discharged simultaneously. Free escape is given to the oil from the entire surface of the cake. No bags or mats are used, the cakes being surrounded with a polished metal surface. By means of the regulating valves, a perfect uniformity is given to the workings of the press, so that its operation is not dependent upon the contingency of the attention or carelessness of the workman.

The advantages of heating by steam, in preparing oleaginous substances for pressing, are now being appreciated, and most of our extensive manufacturers have adopted it in various ways in the important process of tempering. To transfer the substance immediately to the press, on being properly heated, has always been considered of great importance; and if any delay in this occurs, a loss in the yield of oil invariably follows. This press combines the two processes of heating and pressing. The best known methods of heating, by steam, and the best known method of pressing, by hydraulics, are here connected in a manner at once simple and efficient.

More information may be obtained of Knap & Co., makers, Pittsburgh, Pa., or of D. L. Latourette, Patentee, St. Louis, Mo.

Sharpe's Rifle.

We have received three numbers of the "Hartford (Conn.) Excelsior," containing notices of Sharpe's Breech Loading Rifle, engravings of which we published in our last volume. Mr. Sharpe, it is stated, has invented a new primer which supasses Maynard's. It asserts that with 55 grains of powder it sent a ball, weighing one ounce, one mile and a quarter. The bullet used was a picket bullet. The reason given for its superior action, is that "the charge chamber is made larger than the rest of the bore of the barrel, and forms an air chamber around the powder, which produces a more thorough combustion and instantaneous ignition, and the ball meeting with so much resistance, by having to receive the impress of the grooves as it starts, the gas is under high pressure before the ball moves and the same force that starts the ball is required to stop it."

We think it would be well for Mr. Sharpe to prepare a pamphlet describing how to make his cartridges and how to use his rifle. Some have objected to his sliding gate at the breech, and have asserted that it will leak after being used for some time; they also say that it is not strong enough—that there is danger in having it snap off at the shoulder of the stock. The strength of this gate should be mentioned, together with all precautionary information, &c.

Newspaper Portfolio.

Mr. E. G. Taylor, bookbinder in the Sun Buildings, New York, and neighbor to the Scientific American, has invented and manufactures a new kind of portfolio for filing newspapers, which is the best thing of the kind that has ever been brought before the public. The newspaper is put into file by simply turning a screw to admit it, and then it is fastened by turning the screw in a contrary direction. It has covers like other portfolios, and is very neat. This is something which we long considered "an invention wanted." Every person who files a newspaper should have one. The price is $1,50.

The Woodworth Planing Machine.

Resolutions have passed the New York, Pennsylvania, and Ohio Legislatures, instructing the Senators from those States to present the same before the Senate of the United States, as an expression of the decided and well matured opinions of the people of those States, against a further extension of the Woodworth Patent.

We do not make any over-statement of figures, when we say that nine-tenths of the people of the United States are opposed to the monopoly.

In the Boston Post of Feb. 26th, the decision of Judge Sprague is published in the case of the Woodworth and Norcross Planing Machines. Judge Sprague refused to grant an injunction against the Norcross machine, because he held it to be evident that the defendant's machine was not an infringement of the Woodworth Patent. He paid a tribute to the invention of William Woodworth, as we have always done (and never have spoken against it) but then he, like us, thought the owners of the Woodworth Patent claimed too much for it,—they have claimed inventions as being identical with the Woodworth machine, which, in our opinion, were entirely different. They have managed to get injunctions against machines, which we believe were totally different from Woodworth's—not the same at all. The policy of the monopoly has been "to frown down or buy up opposition." They have often abused their privileges as good citizens, and deserve censure.

Some of our readers may be thinking we have said enough upon this subject, and do not like to hear it mentioned, week after week, in our columns. Those readers must bear with us, for the sake of such a vast number who are deeply interested in this subject. The monopoly will not be easily beaten back; they will return again and again to the assault, and every opportunity will be laid hold of to get the Bill passed as secretly as possible. Continual vigilance is necessary in a question of this kind. Let people supply their Senators and Representatives with facts on the subject, and let them keep up the agitation while a speck of war remains in the horizon.

To Treat Persons Apparently Dead.

Remove the body into the cool fresh air. Dash cold water on the neck, face, and breast, frequently. If the body be cold, apply warmth by water.

Professor Emmons, State Geologist of North Carolina, in a letter to the Governor, expresses the fullest confidence that there is an almost inexhaustible source of coal in that State.

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Scientific American

NEW-YORK, MARCH 27, 1852.

Government Rewards for Discoveries.

Many entertain the opinion that it would be better to abolish the patent laws altogether, and adopt a system of government rewards for useful discoveries. If we are not much mistaken, the New York Daily Times advocated a system of this kind, not long ago. There is one scientific gentleman, of no common fame, who has—that is, Dr. Jackson, of Boston, in his address before the American Institute at its last Annual Fair. We have, upon various occasions, stated that such a system could not be carried out fairly—that it was impracticable, and liable to the grossest abuse. We expressed such sentiments when commenting on the Report of the present Commissioner of Patents, wherein he recommended rewards to be applied out of the Patent Fund for certain inventions. Dr. Jackson, in his address above alluded to, stigmatized scientific men for taking out patents; we rebuked him for so doing, and defended the acts of such men as James Watt and Dr. Hare. He thought the system of the Paris Academy, as displayed towards Daguerre in granting him a pension for making his discovery, superior to Patent Laws, and one he would like to see adopted in this country. While we have no objection to academies, societies, and persons offering rewards for useful inventions, we most assuredly affirm, and have affirmed, that a national system of rewards for inventions could not be carried out. We do affirm that the present patent system of our country, with some amendments in the laws respecting court trials, and the conducting of the affairs in the Patent Office, is the best and only rational mode of affording protection to inventors, and of placing within their reach the means of being compensated for being the first to bring out their improvements.

A case is now before our country, which gives force to the correctness of the opinions we entertain, and it is one with which Dr. Jackson himself is associated.

Every person in our land has heard of the "Ether Discovery," as it is termed; that is, the application of ether by making patients inhale it, so as to render them nervously insensible while undergoing surgical operations. The discovery, we believe, is a most valuable one, but there are no less than three claimants of it, two of whom are now living the other, Dr. Wells, is dead. The Legislature of Connecticut examined the claims of Dr. Wells, and awarded him the honor of being the first discoverer. The Paris Academy of Sciences examined the claims of Dr. Jackson, and awarded him a gold medal and the honor of being the first discoverer. Dr. Morton, the other claimant, made an application to the present Congress for a reward for being the first discoverer, ether being used in the army and navy of the United States. We see it stated, in many of the papers, upon reliable authority, that a majority of the select committee, to whom the petition of Dr. Morton was referred, have agreed to recommend that $100,000 be granted to him for his useful discovery. As soon as Dr. Jackson heard that Dr. Morton had made application for the reward, he posted off to Washington and opposed his claim. The minority of the committee, we have been informed, are in favor of dividing the reward, granting $50,000 to each. The controversy between Drs. Morton and Jackson has been bitterly personal, and the whole affair, in our opinion, is a keen reproof to Dr. Jackson for the sentiments he has uttered. We do not pretend to say who is the real discoverer; we do assert, however, that it would be an act of positive injustice to award Dr. Morton the $100,000 and Dr. Jackson nothing. If Dr. Wells had been alive, he perhaps could have established his claim against both of these gentlemen. The application of the ether was not of much consequence before chloroform was discovered and applied as a substitute, and this is the invention of another person—a Dr. Simpson, of Edinburgh. Now, if the Congressional committee desire to be generous on a broad principle, and if chloroform and not ether is employed in the navy and army of the United States, we advise a donation to Dr. Simpson, as well as Drs. Morton and Jackson.

This case gives us an opportunity of showing how superior the Patent Laws are for affording remuneration and justice to all parties—inventors and the people,—in comparison with any system of government rewards.—Here, allowing Dr. Morton to have secured a patent for his discovery, all he has to do to get remuneration for its use by any person, is to bring an action of damages against the person who used it. An opportunity is then afforded, also, to a counter claimant, to establish his rights of priority before a competent court of justice. This system of committee caballing and manœuvring, to lighten the pockets of Uncle Sam, and to get special monopoly privileges, we do detest. Give us broad, just, and workable laws, and let them be carried out faithfully—none of your special systems, where favors are sought for and obtained by particular parties in a particular manner.

It may be as well to add here, that Mr. Guthrie, of New York, is also a claimant with Dr. Simpson, for the discovery of chloroform. There is no way of settling such matters so well as by a trial at common law—the way provided by our Patent Laws.

The Human Hair, Its Treatment, Oils, &c.

Among the races of men, there are hair of nearly all colors—black, brown, yellow, red, and all the intermediate shades; green hair belongs to certain sea kings and mermaids; blue beards, however, are not uncommon in Persia; a blue and yellow make a green, but fashion has not yet brought this color of hair into market, although things of a more ridiculous complexion have at times been marks of *haut ton*, and so may green hair some day hence. Black is the most prevalent color of the human hair—then brown. There are lank hair, woolly hair, curled hair, soft hair, coarse hair, and all the intermediate curls, and quality of fabric. A hair is a tube, and the colored barber who mounted on his sign, Cato Jackson, "Capillary Abridger," had a strong taste for scientific nomenclature. The color given to the hair is by an oil which passes up the interior of the tube. Iron is the principle coloring ingredient in it. The hair of the human head is generally lighter in childhood than in middle age, and it grows grey as old age advances. Many instances are recorded of hair becoming suddenly gray by fear and grief. Byron has well pictured one case in his "Prisoner of Chillon,"

"My head is grey, but not with years,
Nor grew it white in a single night."

The cause of change in the color of hair is not very well known.

It is believed that a man of 50 years of age will, by our custom of cutting the hair, have cut from his head about 13 feet of hair in twenty-five years, and he will have shaved off about 8 feet of beard. Physiologists deprecate the custom of cutting the hair of the head, and shaving that of the chin. They say that cutting the hair diverts the blood from the brain to the surface of the head. Bichat attributes superior strength to the ancients owing to their allowing the hair to grow without cutting.

When the hair falls from the head, its reproduction is almost like that of the teeth when lost by disease, extremely difficult—perhaps impossible. Many causes contribute to make the hair decay early in some people. Intense study and mental labor tend to bring early baldness upon soft-haired people especially. Men of literary and scientific pursuits, become bald more early than those engaged in physical employments. People having strong, hard hair, do not become bald as early as those who have soft hair. We are speaking of the early decay of hair apart from disease. Dandruf makes the hair decay early, and there are many other cutaneous diseases, which act destructively upon the hair. Females do not become bald as early as men. Thin hair on a man is not looked upon as a marked defect, nor is a heavy crop considered a decided mark of beauty. It is otherwise with females; as of old, the long hair of woman is a crown of beauty—a glory unto her. To preserve the hair for a long period, the head (while the hair is strong and good), should be kept clean by being washed often and carefully brushed, especially on the crown, every evening. By washing the head with a solution of borax, say twice per week, those predisposed to dandruf will find a perfect cure for it. An article in the "Philosophical Transactions," says that if the ashes of vine branches are boiled in red wine, and this (the liquid) applied, milk-warm, to the hair every evening, it will prevent the hair from falling out. A mixture of good brandy and olive oil is good to prevent the hair from falling out, by applying it with a sponge before going to bed, and brushing the head well. The head must be well brushed when these lotions are applied.

A plaster of honey and wood ashes, we have been informed, will make the hair grow on bald places. It is put on at night before going to bed. It is also stated, in the work referred to, that if a quantity of the finest roots of the common burdock, taken out of the ground in the month of December, are bruised in a marble mortar and boiled in white wine, say a handful of roots to a pint of wine, for fifteen minutes, then strained and the clear liquor applied, slightly warm, to the head every night before going to bed, that it will make baldness disappear. There are many known cases of persons who had their hair restored partially—a little fine hair came up, remained for a little while, and then vanished. When the hair is once lost, we believe it is not possible ever to restore it as it was before; there may be some cases of perfect restoration, but we know of none.—The best way to treat the head, to preserve the hair, is to brush it often, but not with too hard a brush, and wash it every night or morning with clear cold water, and rub with a towel till it is about dry. Use a little pure olive oil, but very little, to anoint the hair. Perfumes are an abomination to people of exquisite taste and cleanly habits. As Beau Brummel said, "pure air and country washing" were his cosmetics. Fevers of every kind affect the hair and make it fall out. After a fever or during the fever, the hair should be shaved or cut short, this prevents it from falling out.

There are powders for taking off hair. These are made of unslacked lime and orpiment. This is moistened with water and applied in the state of a paste. Unslacked lime itself forms a depilatory powder.

The hair can be colored by a solution of the nitrate of silver, dissolved in water, and applied with a sponge. It makes brown hair black, red hair brown, and white hair of a reddish-brown. The liquid should not be allowed to touch the skin. A mixture of lime and litharge made into a paste with water, and applied to grey hairs, will render them black. It should be applied before going to bed, and the beard or whiskers tied up in a cloth. It takes considerable trouble to brush out the stuff next morning, and it renders the hair harsh, a little olive oil is then necessary to soften it.

To make a beautiful oil for the hair, take a pint of olive oil and bring it up to 200° of heat in a clean pan, (not iron), and add half an ounce of pearlash and stir well for ten minutes. Take it off and set it to cool, when cold, a sediment will be found at the bottom. Pour off the clear through a cotton cloth, and put it up in a bottle for use. The pearlash combines with the margarin acid in the oil, leaving the olein; this will not get thick and will be free from odor. It can be colored red with garancin, (a preparation of madder), but hair oils should never be colored. All the hair oils of the perfumers are either of a red or yellow color. This is to please the eye of the buyer, who mistakes an adulterated for a superior article. Hair oils should be clear and nearly colorless. By exposing the olive oil, refined as described, to the sun, in well corked bottles, it will soon become colorless, limpid as water, and exceedingly beautiful. Any person can thus prepare his own hair oil.

An excellent way to treat the head is to wash it every morning with cold water, and dry it well, rubbing it stiffly with a coarse towel. When the hair is dry, put on a little of the prepared oil described, and brush well, but it is not best to use too hard a brush. On every Saturday evening the head should be washed with half an ounce of borax dissolved in a quart of water. This will form a soap with the oil in the hair, and when a good lather is made, wash all off in cold water, and dry well with a coarse towel, then brush it down and sleep on the subject. Next morning it should be anointed with the prepared oil spoken of. No oil is required to be used by some people; no more should ever be applied by any person than will barely suffice to take off its harshness and render it smooth and soft.

An interesting chapter will be given next week on customs respecting the hair, and national characteristics.

Knapp's Chemical Technology.

The third volume of this great work is now published by H. Bailliere, of London, and 290 Broadway, New York. This volume is the London edition, and not like the former two volumes which have been republished in Philadelphia, it will not be republished. This London edition is sold for $5 the volume, and cannot be republished so well at that low price here. It contains over 30 wood engravings, and is well printed, and has nine large colored copper-plate engravings.

The introductory chapter is on the principles of nutrition; the second paper is on the quality of different waters—and the supply for towns, different modes of filtering for city and domestic use illustrated. It is a most instructive chapter this for every family. It has another paper on milk, cheese-making, &c. Another for preparing meat for food. Another on the culture and manufacture of tea. Another on that of coffee, and it has a most elaborate paper on sugar making. The processes of sugar making and refining are more minutely described in all their branches than any other work on chemistry applied to the arts. We have often been asked the question, "is the third volume of Knapp's Technology published yet?" We have given its price and where it can be had—it is a work by itself. Mr. Balliere is the greatest importer of foreign scientific and mechanical works in our country, such as Prof. Muller's Principles of Physics and Meteorology, Graham's Elements of Chemistry, Weisbach's Mechanics, &c. Mr. Balliere is the agent for the sale of that new great London work by G. D. Dempsey, C. E., named "The Machinery of the 19th Century." Each part is $1,50, (we give the price, knowing that this is valuable information to our readers). Part 1 contains splendid engravings of the Columbian Printing Press; Tile and Brick Machinery; Bishopp's famous Disc Engine; Fairbank's Crane, &c. The drawings are all to scale—working drawings, and as such, the work is of immense importance to all our engineers and machinists. These works are for the mechanics' library.

The Fire Annihilator in Boston.

An able correspondent, (signing himself K.) of the "Boston Olive Branch," attended the lecture of Mr. Phillips, the patentee of the annihilator, which was delivered in that city last week. He asserts that Mr. Phillips' experiment "did not establish anything more than the public generally have been willing to allow, namely, that to a very limited extent—in certain circumstances, his machine, particularly, if of inordinate dimensions, may prove serviceable." The said correspondent is well acquainted with chemistry—this is very evident from his letter. He ridicules the idea asserted by the advocates of the annihilator, that the gas generated in the annihilator can support respiration; he considers the apparatus a catch-penny trick, and were it a Yankee invention he would call it a humbug, but as it is a foreign one, he does not like to be so blunt as with his own countrymen.

American Bad Rails.

Two or three of the accidents which have lately occurred on the Erie Railroad, were occasioned by the breaking of rails, and all such rails were of American iron. The company, in consequence of these accidents, have resolved to take up all the American iron, and replace it with a stronger article. There is about ten miles of it.

[We take the above from a worthy exchange, and have seen the extract in more than one paper. Is it really a fact that these accidents were occasioned by American bad iron?

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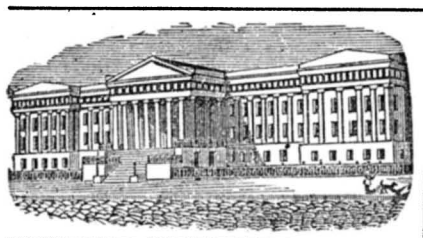

Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING MARCH 16, 1852

DOUBLE PLANE IRONS—By Fordyce Beals, of Pittsfield, Mass.: I disclaim all contrivances, arrangements, or forms of cap, or iron, which together compose a double iron, now in general use.

I claim the new and improved mode of fastening and adjusting the cap to the arm, by means of a projection and slot, forming a dovetail slide, giving new facilities for the operation, and also a level surface to the back of the iron. Also the elongation of part of the width of the cap, and its occupying the place of a removed part of iron, giving the operator new facilities in nicely adjusting cap to edge of iron, without removing it from the stock, the same as described, using for the purpose the aforesaid arrangements of parts, or any other substantially the same, and which will produce the same effect in like manner.

CARPETS—By Thos. Crossley, of Roxbury, Mass.: I lay no claim to the invention of making a carpet by the process of plying and ingraining, in connecting together the plys, or different layers of cloth, whether woven, either with plain (uncolored) or colored yarns. Nor do I claim the process of producing figures by printing them in colors. Nor do I claim to weave a carpet with an uncolored pile or warp, in the Brussels process of weaving, and afterwards printing the figures thereon in colors.

But I claim an ingrained, plied, printed carpet, made by a combination of the process of weaving in two or more plys, and ingraining the same. and subsequently printing the figure or figures on both sides of the same, as described—the discovery having been made by me, that the plying process prevents the colors printed on one ply from penetrating the other ply, so as practically to injure its other surface, to an extent which renders it unfit for the reception of colors, and use as a carpet, as stated, a great improvement in trade being the result of such.

[This patent takes us all aback.—ED.]

GRATE BARS—By F. P. Dimpfel, of Philadelphia, Pa.: I am aware that grate bars have been heretofore so constructed, of metal, that the loose ashes of the furnace might accumulate in cavities therein and protect the bar; but these have been found inefficient in practice, as any loose substance, merely accumulating in the cavity of a metallic grate bar, will shake off even with the edges thereof, and thus expose the bar to the action of the fire.

I claim the construction of grate bars for furnaces of clay, soapstone, or other refractory substance, for the purpose and in the manner specified.

SOFA BEDSTEADS—By J. T. Hammitt, of Philadelphia, Pa.: I claim, first, the combining the back of the sofa with the seat, by means of sliding pivots, in the manner set forth.

I also claim the sliding table and washstand, in combination with the sofa, substantially in the manner set forth.

JOINTS AROUND GLASS TUBES FOR PHILOSOPHICAL APPARATUS—By A. B. Latta, of Cincinnati, O.: I claim the method used for promoting the drying or evaporating of the liquid matter from the packing, by drilling holes in the barrel, the said holes being afterwards filled with solder.

I claim the method of making the joint at the end of the tube, which is effected by the friction of the packing around the tube, which forces the end of the tube against the bottom of the bore, and produces a joint, when the stuffing box is forced to its place, as set forth.

SHOVEL PLOWS—By James Lattimeer, of Chattoogaville, Ga.: I claim the combination of the wing, or half shovel plow and the adjustable scraper, arranged on different stocks in the said beam when the said scraper is arranged on the land side and rearward of the plow, and so that the grass, weeds, &c, shoved off by the scraper, will be thrown into the furrow made by the plow, the whole being arranged in the manner and for the purpose set forth.

COTTON GINS—By T. J. Laws, of Washington, Ark.: I do not claim the use of a mote brush, in combination with gin saws and the ordinary stripping brush, as I am aware that a cylindrical mote brush, revolving in the same direction with mine, has been used before.

But I claim making the mote brush (revolving in the direction described), with wings, so as to act by a current of air, as well as by contact with the cotton on the teeth of the saws, substantially as set forth, in combination with the saw and grate.

TREATMENT OF HYDRO-SULPHURETS, AND IN MANUFACTURING CARBONATES AND SULPHUR COMPOUNDS—By Chas. Lennig, of Philadelphia, Pa.: I claim the manufacture of carbonate of barytes and strontia, by processes as described, and in combination therewith, employing the sulphuretted hydrogen gas, evolved in the aforesaid process, for the producing of sulphur or sulphuric acid.

BURNERS FOR ARGAND LAMPS—By Austin Olcott, of Rochester, N. Y.: I claim arranging the grooved tube for adjusting the wick inside of the wick—and outside of the screw, that is, between the wick and the screw, and extending the pin from the wick holder, through the groove in the tube, into the score between threads of the screw, thereby dispensing with the perforated tube heretofore used upon the outside of the wick, and leaving the wick open on the outside, so that the material to be burned may have free and unobstructed access around the wick.

CUTTING SCREWS ON RAILS AND POSTS OF BEDSTEADS—By J. Parsons Owen, of Norwalk, O.: I do not claim, of themselves only, reversible cutter heads. But I claim constructing the reversible cutter-heads of arms, placed at right angles to one another, and carrying reverse right and left hand cutters (four) in combination with the eccentric snug and flanch of the screw spindle, for the purposes and advantages specified.

CONNECTING WASHERS WITH SPINDLES IN SPINNING MACHINERY—By Horace T. Robbins, of Lowell, Mass.—I do not intend to confine my invention to the application of the spring clasp, or holder, to the countersunk button, as the same holder may be used with a flat button, by having the bobbin countersunk, so as to let the bobbin down over the spring clasp, or holder, such, in fact, constituting the peculiar essence of my invention.

I therefore claim the spring clasp, or holder, or its equivalent, either with or without teeth, in combination with the spindle, or as applied and used therewith, substantially in the manner and for the purpose of holding the washer.

PLANING MACHINES—By Dan. Stearns, of Rome, N. Y.: I claim constructing, arranging, and operating a reciprocating plane, which cuts off the shaving by its forward stroke, and feeds the board by its backward stroke, and the clamps and gripes, or stops, with which such a plane is connected, as described, so that the board is fed at the back stroke of the plane, and planed at its forward stroke, a distance equal, or thereabouts, to the throw or stroke of the plane, whereby a greater length is planed by a given number of strokes of the plane, than in reciprocating planes that feed themselves by their own motion, as heretofore constructed; and also, the injurious shocks and strains are avoided, which, in those planes, are caused by the necessity of making the cut considerably shorter than the stroke.

CUPPING AND BREAST GLASSES—By Wm. S. Thomas, of Norwich, N. Y.: I claim the improved exhausting apparatus described, for surgical and other purposes, said apparatus consisting of a combination of a tubular spring piston with a barrel, substantially as set forth.

PATTERN CARDS FOR JACQUARD LOOMS—By Samuel T. Thomas, of Lowell, Mass., and Edward Everett. of Lawrence, Mass: We claim the combination of the buttons with the metallic card, as described—the buttons being so rivetted or attached to the card, as to allow of their being turned, for the purpose of closing or opening the holes to which they are respectively attached.

HOT-AIR REGISTERS—By Wm. Turton, of Bushwick, N. Y.: I claim the crown wheel, or section of a crown wheel, in combination with the pinion wheel, or section of a wheel, attached to the fans as set forth.

RAILROAD CAR BRAKES—By Thomas Walber, of New York City: I claim the arrangement of the followers (four) with their brake blocks (three), and two links, whereby the power, operating to separate the followers, throws the brake blocks on to each side of each wheel, for the purposes described.

Second, I claim the steam piston and rod, wedge, nut, and screw, in combination with the brakes, arranged and acting as described, whereby the said brakes can be actuated by steam from the locomotive, or by hand, as described.

INSTRUMENTS FOR INHALING POWDERS—By Ira Warren, of Boston, Mass.: I claim the instrument described, for inhaling powder, &c., into the throat and lungs, the said instrument consisting of a receiver with holes in its bulb, or end, covered by and working loosely in an exterior tube, which prevents any of the medicine from lodging in the mouth, substantially as described.

HINGES FOR STOVE DOORS, &c.—By C. J. Woolson, of Cleveland, O.: I claim the connecting and hanging of the door or doors, upon the fronts of stoves or grates, so that they may be opened or closed without marring the beauty or affecting the convenience of the same, in either case, or exposing to view the hinges, or inside of the door, as described

JACK CHAIN MACHINERY—By H Marshall & S. S. Cook, of Stamford, Ct., (assignors to John Bostwick, Jr., & Elbert White): We claim the arrangement on the bed plate of the nipping jaw, the mandrel, and pin, with the turning lever (furnished with a pin) moving under the table in the manner substantially as set forth.

[For the Scientific American.]
Extinguishing Fires in Ships.

On reading the account of the burning of the steamer Amazon, with the sad loss of life attending that heart-rending catastrophe, a train of reflection was re-kindled in my mind, such as has been presented to it on every recurrence of the kind, since the burning of the Lexington; and the question "cannot some means more effectual be devised to save our fellow men from such dire calamities?" has been brought home with force to my consideration. I would simply remark that the following is a general description of a fire engine, for which I made application for a patent during the past year, but which the Commissioner decided did not possess sufficient novelty to secure a patent:—

Construct in the lower part of the vessel a water-box of suitable size and strength, let it communicate freely and at all times with the water by a pipe, through the side or bottom, yet in such a manner that it may be closed if necessary, place it so low down in the hold that it may have two or two and a half feet water in it; in this box firmly secure four working cylinders, similar to those in ordinary fire engines, with the necessary valves attached to them, let the rods attached to the plungers or pistons of these cylinders connect with a crank, on the shaft of which, secure a bevel pinion; let the pinion connect with a driving wheel, so calculated that it will give to the pinions four revolutions to one of its own, let the shaft to which this driving-wheel is attached, extend upwards through the deck, about three feet, and terminate with a cap with chambers in it, to receive bars, or handspikes, similar to a ship's capstan; use 8 bars, 10 feet long, made of tough unyielding timber, and so attached to the cap that when not in use they may be turned upwards and secured in that position. When wanted for use, let 40 or 48 men take the bars and press them around, and every revolution will discharge 16 cylinders; let the cylinders be 14 inches diameter, with 12 inch stroke, and each one will contain 1764 cubic inches, the whole 16 containing 28,224 cubic inches, equal 130½ gallons; let the men make two revolutions per minute and they will discharge 261 gallons, equal to 4½ hhds. of 60 gallons each, during that minute. There is little doubt, that under such trying circumstances, they could make double that number, but I will take that as the average of speed. Place one of these engines in the bow, and another in the stern of the vessel, as far from the region exposed to the fire as they can be; man them and set them at work, and in ten minutes they would discharge 5,220 gals., or 87 hhds. of water, on the burning mass; and could not any of the ill-fated vessels whose destruction has been recorded, have been saved from their fiery doom by such a flood? From each of these engines, let two discharge pipes, 1½ inches in diameter, terminate in the most exposed part of the vessel, with a hollow globe of about 10 or 12 inches in diameter perforated with numerous holes of a proper size, always open, so that the moment the engines start, the water will be sent to the spot where it is needed, without any exposure of men to direct it there. When these pipes are not needed, they may be closed, and ordinary hose attached to other discharge pipes, or all may work together. I have said nothing about power, for in such a crisis despair itself would nerve every man and woman on board, to exert twice or thrice their usual force, and the great danger would be, that the machinery would give way under their frantic exertions, unless securely guarded against.

I have noticed, in all records of burnt vessels, when allusion has been made to their fire engines, that in a few minutes they were rendered entirely useless, on account of the intense heat, being directed, as they must be, from a position near the fire; and in most cases the engineer is the first officer driven from his post; but in this case the last who would be driven from their posts would be the men working the engines.

The readiness with which such an engine could be put in operation would be greatly in its favor, for, in ordinary cases, the first 8 or 10 minutes after the first alarm decides the fate of the vessel; and in this case, as the engine is always in readiness, not one minute would elapse before the streams would be pouring upon the fire, and that could be done, too, by the passengers themselves, without the direction of the officers, whose presence might be needed elsewhere; for, doubtless, the passengers, to relieve the tedium and monotony of the passage, would occasionally operate the engine for amusement and recreation, and thus become acquainted with its mode of operation.

But suppose, as is sometimes the case, fire should originate low down in the hold, so that it would be necessary to flood the vessel; to meet that case, let a four-inch pipe, prepared for the purpose, with a stop-cock or valve, communicate with the hold from the water box; open these valves, and the vessel would soon be flooded. while, at the same time, the engines might be pouring the water down the hatches.

Again, suppose that instead of fire, the vessel has sprung a leak; let there be prepared for this event a suction pipe, connecting the engine with the well; stop the pipe that supplies the box with water, and use the engine for a force pump. With two engines, or even one of this kind, could not the Helena Sloman have been saved? JOSHUA CLEWES.

Elmira, N. Y.

The Yacht America.

Some time since, an English paper, envious of the fame of the yacht America, started a report that the purchaser of that beautiful craft was disappointed in her, and was anxious to sell her at a reduced price. This report, which was eagerly seized upon by the English papers, was, without doubt, unfounded. It will be seen, by the following extract of a letter, dated Malta, Feb. 6, that the performance of the yacht, on her Mediterranean voyage has been highly satisfactory:—

"The America, the wonder of the day among yachts, arrived here on the 2nd inst. She came in in beautiful style, after laying-to for four hours in a heavy gale from the N. N. E. Her noble owner, Lord de Blanquiere, is loud in her praises as a vessel of remarkable speed and buoyancy. She will be within four points of the wind and do her fifteen knots an hour with ease. Since leaving England she has had a fair share of heavy weather, and had there been any truth in the prognostics of her detractors, that her masts would be carried away in bad weather, and other similar follies, there was every possible opportunity of their being realized. But the pretty craft nobly did her duty, doing her 14 knots for a whole night, when running with but her jib set, and setting all bad weather at defiance. During her stay she has been visited by numbers of persons. The America will proceed to-morrow to Alexandria."

Liquors Made in the United States.

The Census Report gives the amount of whisky made in the dominions of our Republic at 42,133,955 gals.; rum, 6,500,500 gals.; beer, 1,177,924 gals.,—total, 49,812,379 gallons of whisky, rum, and beer. The amount is more than two gallons for every man, woman, and child in the country, per annum. A great deal of this is exported, but perhaps we import more brandy and wine to make up for it. New York and Pennsylvania are the great distilling and beer making States in the Union. Some consider beer to be a healthy beverage, others do not.

Gum Elemi.

This is a concrete resinous exudation, of which there are several varieties. The gum elemi of commerce is said to be furnished by Amyris hexandra of the West Indies. It is also said to be furnished by the Canarium of balsamiferum of Ceylon, and by the Icica icicariba of the Brazils. It is imported in cylindrical cakes covered with palm leaves; but, as it is scarce and costly, it is sometimes adulterated with common fir-tree resin. Its chief use is to form pastilles, or to burn as incense: it has been recommended as an ingredient in ointments, and also in some kinds of varnish. Fresh elemi is soft and viscid, but becomes hard and brittle by cold and by age; it is yellow, translucent, and of a peculiar odor, somewhat resembling fennel: it yields a volatile oil when distilled with water. It contains about 60 parts of an acid resin, soluble in cold alcohol, and 20 parts per cent of an indifferent crystallizable resin soluble in hot alcohol.

Maryland Institute---Chemistry.

We learn by the Baltimore Sun, that Mr. Campbell Morfitt, author of "Applied Chemistry," is now inducted regular Professor of Chemistry in the Maryland Institute. His opening lecture before the institute is said to have been a brilliant one. In speaking of chemistry he said:—

Chemistry is a material relative of all—a great storehouse, filled with knowledge suited to the wants of all. Chemistry is the only true socialist; for while it furnishes benefit to every community, it is upon fixed rules, which neither policy, persuasion nor legislation can change. She is immutable in her ways, acting as naturally as astronomy; with greater precision than mathematics; greater certainty than human jurisprudence; more universal than justice; with greater industry than art or handicraft, because her operations never cease; and with as much benefit to mankind as all the theories of faith, because in her works she manifests by unvarying attributes, and by her faithfulness of universal good, the unmistakable existence of a first great cause—a Providence.

Chemistry brings its aid to medicine—points out the evil and recommends the remedy; teaches how to fix dyes and colors; how to temper iron and steel; to mix and perfect the different preparations of the chandler, the glass maker, the refiner of metals, of sugar, and of all other substances; enters into every ramification of the labors of the living, and is sometimes called to lift its torch of light over the grave, to see if the stealthy hand of crime had added no drug to hasten the departing hour of the dead.

It is, therefore, not a confined art, but a universal agent. It has not a limited field for its operations, but an unbounded plain. In short, its usefulness extends to all the wants of man and its boundaries are co-extensive with nature itself.

[How true this is! We have heard novices in science—enthusiasts in mathematics assert that mathematics alone was *a true science.* This is a great error.

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TO CORRESPONDENTS.

The inquirer at Portland, Me., about information respecting Patents in foreign countries, did not sign his name to his letter, therefore we are unable to comply with his request, not knowing to whom we should address the reply.

W. W. B., of N. Y.—You can manufacture and sell to whom you please, but the word patented must not be used until the letters issue.

S. B. C., of O.—All right !

C. L. A., of D. C.—We have received yours and will give it attention.

J. G. E., of N. C.—We cannot get you the Courier with the problem. Mr. O. Byrne resides in Philadelphia. Playfair's Euclid is the work we recommended. We have lately seen a plan to take the downward pressure off the gudgeon of the Hotchkiss wheel; we are not at liberty to say how it is done at present. Practically we cannot say much about Howd's Wheel.

W. F. S., of Ohio—There are very many patents on axles ; so far, however, as we are able to understand yours, from the description, we think it new and patentable.

L. H. A., of S. C.—Your inquiries about the Dick Press we have submitted to the manufacturers for their attention.

N. G., of N. Y.—We have little doubs of the novelty of your device, and see no objection to its practical utility. It could be constructed cheaper than the governor, but of its perfect accuracy it is impossible to judge without an experiment. If it works well its cheapness will make it a great desideratum.

G. D. J., of Pa.—The varnish on page 107, Vol. 6, is the best with which we are acquainted.

M. J. L., of Meredith Bridge—Having never had the itch ourselves, we are unable to recommend to you a cure. Had you paid the postage on your letter we might have consulted some eminent physician here and obtained for you the remedy you seek, but we could not afford to pay postage and consultative fees too.

McK. J., of N. C.—Gutta Percha is used for water pipes, and they are not liable to burst by freezing. They stand a great pressure, but how much we cannot tell. They are sold by "the American Gutta Percha Co., S. T. Armstrong & Co., New York." The price we do not know ; they are not much used. We cannot account for the water not running in the pipe you refer to, except upon the condition that it contained compressed air.

S. R. D., of Pa.—We have seen gas made from bitumen and petroleum, by putting it into a short iron retort and introducing it at once into the furnace. Dr. Gesner has a patent for this mode of making gas. We believe that the same plan would answer for resin, without the extra boiler. You may be able to change our opinion, however.

C. H. L., of La.—Well, the case of the lightning rods, is amusing

S. H., of Conn.—You cannot get a patent on your mode of drawing a boat across a river, for it is a well known plan.

W. H. M., of Pa.—The reason given for water propelling machinery in a superior manner, by night, is owing to the difference of atmospheric pressure on the water which propels the wheel,—the air is more rarified during sunshine, than at night. Fires also burn better, after the sun goes down, upon the same principle.

S. R., of Md.—You can manufacture and sell plumb and levels on either plan you have described without the least danges of interfering with any patent.

Money received on account of Patent Office business or the week ending March 20.

W. & L., of N. Y., $15; J. A. B., of N. Y., $30; S. R. & H., of N. Y., $50; F. & H., of Mass., $30; W. W. B., of N. Y., $20; J. P. D., of Pa., $105; J. L, of N. Y., $32; D. S., of N. Y., $30; W. T. P. & R., of N. Y., $3; C. H. P., of N. Y., $20; W. P. R. & T., of N. Y.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending March 20 :

N. B., of R. I.; S. W. A., of N. H.; C. H. P., of N. Y.; S. G., of N. Y.; W. W. B., of N. Y.; J. H. S., of N. Y.; W. P. R. & T., of N. Y; W—s & S., of Pa.; J. L., of N.Y.; J. T. H., of Pa.

New Arrangement.

Several of our readers have expressed a wish to subscribe for some literary journal in connection with the Scientific American, not feeling able to take both. We have entered into an arrangement with the publishers of the "American Model Courier," of Philadelphia, and the "American Union," of Boston, which will enable us to furnish either of the two, with the Scientific American, for $3 per annum. They are literary journals of the first order, and are widely circulated in all sections of the country.

☞ Parties cannot be allowed an addition of one of the Literary papers, as above, by remitting a single dollar after paying their year's subscription to the Scientific American, and money received under such circumstances will be credited in continuance of the Scientific American.

An Important Paragraph.

Whenever our friends order numbers they have missed—we always send them if we have them on hand. We make this statement to save time and trouble, to which we are subjected in replying when the numbers called for cannot be supplied.

The Post Office Laws do not allow publishers to enclose receipts ; when the paper comes regular subscribers may consider their money as received.

Subscribers ordering books or pamphlets are particularly requested to remit sufficient to pay postage.

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HENRY P. M. BIRKINBINE.
1* NEWBOLD H. TROTTER,

BAILEY'S LATHE—For Turning Broom and other Handles, Chair Stuff, straight, swelled, or tapering, warranted to do twice the work of any other lathe. Address L. A. SPALDING, Lockport, N. Y. 28 4

MORSE'S AIR DISTRIBUTOR—For Burning Sawdust and Tan to generate steam—no steam saw mill is complete without it. Rights to use it in the State of New York for sale by L. A. SPALDING, Lockport, N. Y ; or JOHN A. CAMPBELL, Buffalo, N. Y. 28 4

L. F. WHITTAKER, Inventor of the Self-Swinging Musical Cradle, may be seen at the Howard Hotel on and for a short time after the 20th, where he will take great pleasure in exhibiting a model of his invention to persons desirous of purchasing rights, 1*

PORTER'S GRADUATING VALVE TUYERE—Illustrated in this paper Sept. 6, 1851, gives a sure, quick, and clean heat, and saves full 25 cts. per day to each fire. For sale, wholesale and retail, at No. 9 Gold st. W. J. & J. H. BURNETT. 28 4*

RARE CHANCE FOR A MACHINIST or others—A Machine Shop, with stock and tools, for sale : it has been in successful operation for four years, is now doing a good business, and with means it may be increased to almost any extent. Satisfactory reasons given for selling out. Price $1200. Also a 30 horse-power Engine for sale : price $1200. Apply to A MUIR, 33 Vestry st. (up stairs), N. Y. 1*

ADVERTISEMENT—NICKERSON'S PATENT FIRE-ARMS—This is the only species of fire-arms for loading at the breech, that can, with propriety, be adapted to the ordinary musket. Its simplicity admits of great economy and solidity of construction, and is well worthy the attention of merchants, manufacturers, &c., as peculiarly suited to the African, South American, and Indian trade. Fowling pieces may be made with great beauty, dispensing entirely with the ramrod, and are every way preferable to those now in use. Proposals for rights of States, or an interest in the manufacture of the same, will be received (post-paid) by C. V. NICKERSON, Inventor and Patentee, Baltimore, Md. 27 2*

SCHENCK'S MACHINERY DEPOT, No. 64 Courtland st., N. Y.—Has on hand a great variety of Slide and Hand Lathes, Upright Drills, Steam Engines, of 3 1-2 and 6 horse power, and will receive order for engines of any size; Universal Chucks, Iron Planers, White's Patent Lathe for turning Railroad Car Axles, Hand Punches, and Shears ; F. Harriss & Son's Shut and Scouring Machines; Fairman's Chuck Lathe for Boring Car Wheels, &c., all of which I will sell as low and upon as accommodating terms as any house in the city.
27 5* SAM. B. SCHENCK.

DRILLING MACHINES—Self-Acting Drilling Machines, of the best construction, capable of drilling holes from one-eighth inch to three inches diameter, with a suitable feed, manufactured and for sale at the Atlas Foundry, corner of Green and Wayne sts., Jersey City. JOHN D. WARD. 27 4*

JOHN W. GRIFFITHS—Ship Builder and Marine Architect, 658 Fourth st., N. Y., furnishes models and draughts of all description of vessels, with the computation of stability, capacity, displacement, and necessary amount of impulsion. Propelling power located and proportionably adapted to the form of the vessel, whether sailing or steaming. Mr. G. also superintends the construction of vessels, and may be consulted upon all subjects pertaining to the various departments of the science or practice of ship building. Draughts forwarded by letter to all parts of the world, and to any desired scale ; all letters must be post-paid. 27 13*

LEONARD'S MACHINERY DEPOT, 109 Pearl-st. and 60 Beaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinists's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting.
27tf P. A. LEONARD.

COTTON MACHINERY—One new Ring and Traverser Warp Frame, 156 spindles, and three new Looms, built in the best manner by the Mateawan Co., and for sale at 60 Beaver st., N. Y., by
27 3* P. A. LEONARD.

STEAM ENGINES AND BOILERS—The patentee is now ready to supply orders for steam engines with Ayer's Patent Improved Boiler of any size required. These boilers occupy but little space, can be set up without brick work, and will make more steam with the same fuel than any other boilers. A self-acting feeder furnishes a constant supply of water, preventing thereby, in a great degree, the danger of explosion. Where doubts are entertained as to the superiority of these boilers, I will be content to receive for the right one-fourth of the value of the fuel saved by their use. Portable engines furnished to order. E. AYER, Patentee, Norwich, Conn. 26 7*

J. ADAMS & SONS, AMHERST, MASS.—Patent Felly Machine. Belden & Colton, 98 Chamber st, New York; John B. Wynn, Anderson C. House, S. C.; Agents for sale of rights of machines and territory. Whitman & Co, Baltimore, Md.; P. A. Leonard, New York City; Agents for sale of Machines. 25 4*

A. B. ELY, Counsellor at Law, 46 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 13tf

CLOCKS FOR CHURCHES, PUBLIC BUILDINGS, RAILROAD STATIONS, &c., and REGULATORS FOR JEWELLERS.—The undersigned having succeeded in counteracting entirely the influence of the changes of the temperature upon the pendulum, and introduced other important improvements in the construction of clocks, are prepared to furnish an article, superior to any made in the United States, (the highest grade warranted to vary less than two minutes in twelve months). Glass dials for illumination furnished. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, Long Island, N. Y.
"At the Oakland Works of Sherry & Byram there are made some of the finest clocks in the world."—[Scientific American.
"Mr. Byram is a rare mechanical genius."—[Jour. of Commerce. 26tf.

THE SUBSCRIBER is now finishing four 14 horse engines, with boiler and apparatus all complete—price $1200 each. Several 6 horse engines extremely low : also, several of smaller capacity, completely ; also, several power plainers, now finishing. Galvanized chain for water elevators, and all fixtures—price low—wholesale and retail. Orders, post-paid, will receive prompt attention. AARON KILBORN.
No. 4 Howard st., New Haven, Ct. 23 10*

TO FELLOE AND SNATH MAKERS—The undersigned having purchased the entire right of A. W. Johnson, for his machine for bending carriage felloes, &c., are now prepared to sell State or county rights for said machine; having used said machine for several years, we know it to be a saving in timber of 30 per cent, and more expeditious. Persons can see one of the machines at work at the manufactory of W S. Johnson & Co., St. George's, Del.; also felloes of all kinds. Shafts and carriage stuff always on hand, and at prices to suit dealers in the above. WM. G. JOHNSTON & Co.,
22 10* St. George's, Del.

A CARD—The undersigned begs leave to draw the attention of architects, engineers, machinists, opticians, watchmakers, jewellers, and manufacturers of all kinds of instruments, to his new and extensive assortment of fine English (Stubbs) and Swiss Files and Tools ; also his imported and own manufactured Mathematical Drawing Instruments of Swiss and English styles—which he offers at very reasonable prices. Orders for any kind of instruments will be promptly executed by F. A. SIBENMANN, Importer of Watchmakers' and Jewellers' Files and Tools and manufacturer of Mathematical Instruments, 154 Fulton st. 23 13*

IRON FOUNDERS MATERIALS—viz. : fine pulverized Sea Coal, Anthracite and Charcoal, Black Lead and Soapstone Facings. Iron and brass moulding sand; Core sand and flour ; English Fire Bricks for cupolas, &c. Fire Sand and Clay—for sale by G. O. ROBERTSON Liberty place, (near the Post Office) N. Y. 23 10*

VENTILATION—In reference to the advertisement which I have had in this paper for some time, and also in reference to the reward offered by F. M. Ray "for the best method of excluding dust from cars when in motion," I beg to inform car building companies, railroad companies, and steamboat companies, that my patent includes the Ventilation of all these vehicles, and covers the whole ground of "excluding dust," &c. I expect to be in New York and Boston some time next month, of which notice will be given in some of the daily papers, as also of the place where I may be found. H. RUTTAN.
Coburg, Canada, Feb., 1852. 24 5*

TRACY & FALES, RAILROAD CAR MANUFACTORY—Grove Works, Hartford, Conn. Passenger, freight, and all other descriptions of railroad cars and locomotive tenders made to order promptly.
26tf

POST'S PATENT SLIDING DOOR FRONTS—for stores and Public Buildings; a new, cheap, and simple fixture for securing store fronts, which renders them fire and burglar proof, has been invented and patented by the subscriber, who is now prepared to sell rights. Messrs. Quarterman and Son, 114 John st, N. Y., are general agents. Address, (post-paid) Wm. POST, Architect, Flushing, L. I. 25tf

MALLEABLE IRON FOUNDRY, EASTON, Mass.—The subscriber continues to manufacture castings of every variety, for machinery and other purposes, of the best quality, at the above establishment. We have facilities for making castings 5 1-2 feet in length. Persons wishing castings can send patterns to Eastern Express, Boston, Mass. All letters will be promptly attended to.
2110* DANIEL BELCHER.

NEW HAVEN MANUFACTURING COMPANY, Tool Builders, New Haven, Conn., (successors to Scranton & Parshley) have now on hand $25 000 worth of Machinist's Tools, consisting of power planers, to plane from 5 to 12 feet; slide lathes from 6 to 18 feet long; 3 size hand lathes, with or without shears; counter shafts, to fit all sizes and kinds of universal chuck gear cutting engines; drill presses, index plates, bolt cutters, and 3 size slide rests. The Co are also manufacturing steam engines. All of the above tools are of the best quality, and are for sale at 25 per cent. less than any other tools in the market. Cuts and list of prices can be had by addressing as above, post-paid. Warehouse No. 12 Platt st., New York, S. C. HILLS, Agent N. H Man'g Co. 25tf

MORTISING MACHINE.—Dear Sirs : I received the Portable Mortising Machine about 3 weeks ago ; I have used it, and am very well pleased with it. It is the best plan of a machine of the kind I have ever seen. W. R. McFARLAND.
Nashville, Tenn., 1851.
This machine is simple, durable, and effective, and is boxed and shipped for the low sum of $20.
MUNN & CO.

WHITE'S TUBULAR SUSPENSION Bridge. The subscribers would respectfully announce that they have recently obtained Letters Patent for the above invention, and are now prepared to contract for, and build at their own risk, bridges extending any required length short of two thousand feet at one span, and sustaining any specified weight. The principles involved in the construction of this bridge, combining as it does the practicability of spanning long reaches, together with strength, economy and durability, have secured it the favorable notice and admiration of many of our most skillful and scientific men. Those interested in Bridge building, may address either of the proprietors. AMMI WHITE, 17 Prospect street, Boston. JOSHUA P. THAYER, Cambridgeport, Mass. 25 3*

BEARDSLEE'S PATENT PLANING MACHINE, for Planing, Tonguing and Grooving Boards and Plank.—This recently patented machine is now in successful operation at the Machine shop and Foundry of Messrs. F. & T. Townsend, Albany N. Y.; where it can be seen. It produces work superior to any mode of planing before known. The number of plank or boards fed into it is the only limit to the amount it will plane. For rights to this machine apply to the patentee at the abovenamed foundry—or at his residence No. 764 Broadway; Albany. GEO. W. BEARDSLEE. 23tf

PAINTS, &c. &c.—American Atomic Drier, Graining Colors, Anti-friction Paste, Gold Size, Zinc Drier, and Stove Polish.
QUARTERMAN & SON, 114 John st.,
23tf Painters and Chemists.

MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery oil, Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 26 tf

WOODWORTH'S PLANING MACHINE—For sale, the right to use this justly celebrated labor-saving machine in the following States, viz., Pennsylvania west of the Allegheny Mountains, Virginia west of the Blue Ridge, Ohio, Indiana, Kentucky, Tennessee, Wisconsin, Iowa, Missouri, Arkansas, Texas, Louisiana, Florida, Alabama, and Mississippi. For particulars apply to the Proprietor, ELISHA BLOOMER, 208 Broadway. 17 12*

WOOD'S IMPROVED SHINGLE MACHINE—Patented January 8th 1850, is without doubt the most valuable improvement ever made in this branch of labor-saving machinery. It has been thoroughly tested upon all kinds of timber and so great was the favor with which this machine was held at the last Fair of the American Institute that an unbought premium was awarded to it in preference to any other on exhibition. Persons wishing for rights can address (post-paid) JAMES D. JOHNSON, Bridgeport, Ct.; or WM. WOOD, Westport; Ct., All letters will be promptly attended to. 22tf

THE EXCELSIOR Sand and Emery Papers. are offered as new and superior articles, being manufactured by an improved process ; the paper is made from the best Manilla hemp, and consequently is very strong and lasting ; the grit is of the sharpest and most enduring kind, and is firmly attached to the paper with a remarkable evenness of surface ; their freeness from ridges, stripes, and other imperfections, recommend them to the notice of consumers. These papers have been used by many of our first mechanics, and are pronounced superior to all others. Every sheet is stamped WM. B. PARSONS, and warranted. Samples furnished at the office, No. 187 Water street, New York. WM. B. PARSONS,
14 6m* Sole Proprietor.

P. W. GATES'S PATENT DIES FOR CUTTING SCREWS—Patented May 8th, 1847.—This Die cuts Screws of any size, V or square thread, by once passing over the Iron. Also, Lead Screws for Lathes, Hoisting Screws, &c. All orders for Dies and Taps, with or without machines, will meet with prompt attention by addressing P. W. Gates, or Gates & McKnight, Chicago ; Marshall, Bement & Colby, Philadelphia ; Woodburn, Light & Co., Worcester, Mass. References—All the principal machine shops in New York, Philadelphia, and Boston. 13 6m*

MACHINIST'S TOOLS.—Marshall, Bement & Colby, (successors to E. D. Marshall & Co) Callowhill street, west of Schuylkill Third, Philadelphia, Pa., are prepared to make to order, and keep on hand Machinist's Tools, such as Planing and Compound Planing Machines, on a new and improved plan, Slide and Hand Lathes, Upright and Horizontal Drills, Upright Boring Machines, Improved Screw and Bolt Cutting Machines, with P. W. Gates' Patent Dies and Taps, or with the common Dies, Gear Cutting Engines, Slotting and Paring Machines. Also keep on hand Washburn & Whitow's Patent Scroll Chucks, of all sizes. All orders by letter or otherwise will receive their prompt attention. E. D. MARSHALL, WM. B. BEMENT, G. A. COLBY. 21 10 *

CHAS. W. COPELAND, Consulting and Mechanical Engineer, Surveyor of Steam Machinery, &c., No. 68 Broadway, N. Y., superintends the construction of steam vessels and steam engines, and machinery of every description; specifications and contracts prepared ; also general plans and drawings in detail furnished. Steam engines surveyed and valued, and condition reported. Mr. C. also acts as agent for the purchase and sale of steam vessels, steam engines, boilers, &c. 21 10*

MANUFACTURE OF PATENT WIRE Ropes and Cables—for inclined planes, suspension bridges, standing rigging, mines, cranes, derick, tillers &c.; by JOHN A. ROEBLING; Civil Engineer—Trenton N. J. 47 1y*

PATENT CAR AXLE LATHE—I am now manufacturing, and have for sale, the above lathes ; weight, 5,500 pounds, price $600. I will furnish a man with each lathe, who will turn and finish axles for 50 cents each, if desired. I have also for sale my patent engine screw lathe, for turning and chucking tapers, cutting screws and all kinds of common job work, weight 1500 lbs., price $225. The above lathe warranted to give good satisfaction. J. D. WHITE, Hartford, Ct. 7 6m*

LOGAN VAIL & CO., No. 9 Gold street, New York, agents for George Vail & Co., Speedwell Iron Works, have constantly on hand Saw Mill and Grist Mill Irons, Press Screws, Bogardus' Horse-Powers, and will take orders of Machinery of any kind, of iron and brass ; Portable Saw-mills and Steam Engines, Saw Gummers of approved and cheap kind, &c. Gearing, Shafting, large and small, cast or of wrought iron. 11 1y

HAWKIN'S Stave Dressing Machine—Is now in operation in the city of Milwaukie, Wis., and will dress from 6 to 8000 staves per day, ready for the truss hoops, and at one operation. Rights for States and Counties, and also machines, for sale, apply to WM. HAWKINS, Patentee, Milwaukie, Wis.
15 20*

1852 TO 1856.—WOODWORTH'S PATENT Planing, Tongueing, Grooving, Rabeting, and Moulding Machines.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines. Price from $150 to $760. For rights in the unoccupied towns and counties of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 26tf

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SCIENTIFIC MUSEUM.

Agricultural Science.

MINERAL THEORY OF MANURES.—Messrs. Lawes & Gilbert have published, in the Journal of the Royal Agricultural Society, the results of many experiments, made by them in the course of many years, to ascertain the correctness of the idea advanced by Liebig, that it is only necessary to apply the ashes of plants or mineral substances, for the support of crops. They took plots of ground of equal quality, containing equal superfices, and applied different substances to the same crop. In one instance, ground which had no manure, produced 16 bushels of wheat to the acre; 14 tons of yard manure produced 22 bushels; the ashes of 14 tons of yard manure, 16 bushels; mean produce of nine plots supplied with artificial mineral manures, 14 bushels 3 3-4 pecks; on other plots the addition of 65 pounds sulphate of ammonia, (which Liebig held was unnecessary), gave an average of 21 bushels. The increase by the use of the mineral manures recommended by Liebig, was, therefore, less than two bushels per acre, and the increase by ashes of manure nothing.

COPROLITES.—These are the remains of reptiles, in a petrified state. They occur in nodules and cylindrical shaped masses, and are composed essentially of phosphate of lime, whence they have become among farmers in England, a substitute for bones. They occur in enormous beds in England.

"To fertilize her fields, England requires an enormous supply of animal excrements, and it must, therefore, excite considerable interest to learn that she possesses, beneath her soil, beds of fossil guano, strata of animal excrements, in a state which will probably allow of their being employed as a manure at a very small expense. The coprolites discovered by Dr. Buckland—a discovery of the highest interest to geology—are these excrements; and it seems extremely probable that in these strata, England possesses the means of supplying the place of recent bones, and therefore the principal conditions of improving agriculture—of restoring and exalting the fertility of her fields.

What a curious and interesting subject for contemplation! In the remains of an extinct animal world, England is to find the means of increasing her wealth in agricultural produce, as she has already found the great support of manufacturing industry in fossil fuel—the preserved matter of primeval forests—the remains of a vegetable world. May this expectation be realized! and may her excellent population be thus redeemed from poverty and misery.—[Liebig.

LIQUID AND SOLID MANURE.—Charles Alexander, a careful and accurate farmer in Scotland, found that while 14 head of cattle would make six loads of solid manure, the liquid would saturate seven loads of loam, rendering it of equal value. He had repeated the experiment for ten years, and found the saturated earth fully equal to the best putrescent manure. How many dollars' worth are thus lost annually by each of the million farmers of this country? And what is the aggregate loss in the whole country taken together?

Agricultural Chemistry.

If land be comparatively unproductive, the sure method of determining the cause is, first, to ascertain the extra nature and relative qualities of the ingredients of the soil (which can only be done by chemical analysis), and then to supply the soil with the defficient materials requisite for the growth of such vegetables as it is best fitted to produce. The preparation of compost will only be of real use when materials which do not afford, singly, an efficient or convenient manure, are made to do so by their mixture. Every farmer has it in his power so to compound the best from his store of manuring materials, that the defects of his soil may not only be remedied, but that the crops may receive those substances in sufficient quantity which are required for their vigorous growth. To do this, however, it is requisite to know, not only the component parts of the soil, but also those of the crops. If these are not taken into account, no clear idea of the composition, much less of the action of manures, will ever be obtained; and many substances of real value will be tried, and, from misapplication, tend to useless, if not injurious, results. Perhaps some compound of iron, in injurious excess in the soil, unfits it for a particular crop; but by lime or some other alkali, it might be rendered harmless; or an excess of sand may be neutralized by the addition of clay. If there be an excess of undecomposed vegetable matter, it can be decomposed, rendered soluble, and immediately available to the growing plant, by the judicious use of caustic lime; or, by burning.—With the aid of chemistry, the precise value of any variety of limestone may be determined in a few minutes; and so its fitness or unfitness for fertilizing the soil may be determined by a less expensive experiment than waiting to observe its action upon the land. In the same way, peat-earth is an excellent manure; but there are some varieties of peat which contain so large a quantity of the compound of iron, such as bog-ore, as to be absolutely injurious, if not destructive, to grass and corn.

We know that, as soon as stable manure begins to decompose, it throws off its volatile or gaseous parts—it is necessary that this should be examined; such evaporation is not mere transposition—it is the actual loss of that which forms a most material ingredient in the food of plants; and so, whether this shall be supplied gradually to the growing plant, or all at once, is the question so often agitated among practical farmers, and determined frequently by individual caprice or fancy—whether the produce of the stable or the farmyard is best, when spread upon the soil in a fresh or putrid state.

On some soils a plant will thrive—on others it will languish; and the same knowledge which will enable us to correct weak or faulty vegetation will enable us also to produce more abundant results.

On Boilers.---No. 18.

FIG. 34.

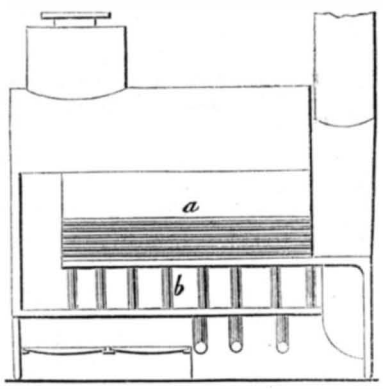
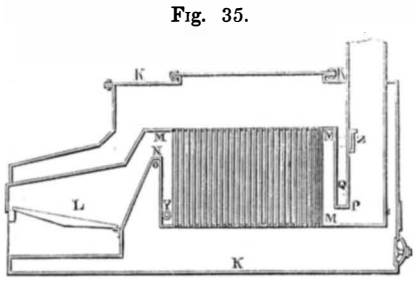


Figure 34 is a longitudinal section of the boiler of Thomas Halloway, of Phila., built in 1835. It has horizontal tubes, *a*, and vertical tubes, *b*. It has vertical tubes and water sides above the furnace. The tubes are not numerous, but the principle of their useful application is fully demonstrated. By an increase of tubes, an increase of fire surface is obtained.

Figure 35 is a section of Lord Dundonald's steam boiler, patented in 1843. K K represents a steam boiler; it may be of any shape; L is the fire place; M M is a rectangular chamber, with a number of vertical tubes in it, through which the water flows in consequence of the water therein becoming hotter than other parts of the boiler. The heat of the fire passes into the chamber, M M, at N, over the bridge, G, at the end of the furnace. The pas-

FIG. 35.



sage, P, from the chamber into the chimney, is situated as low as possible in order that the greater heat of the vapors may be retained in the said chamber. This invention was described in Vol. 2, 3rd series, London Repertory of Inventions. The peculiar arrangement of the chamber, M, within a boiler, when containing tubes, combined with the outlet, P, into the chimney, so as to leave considerable space above it (for the more highly heated vapors to be retained in the chamber, M) was claimed by the inventor to constitute the peculiar character of his invention. Z is an opening into the chimney at the upper part of chamber, M, to facilitate the getting up a draught when the fuel is first kindled; it is closed at all other times; Y is a steam pipe in connection with the upper part of the boiler, and has a stop cock. This pipe is drilled with many small holes in the direction towards the chimney, by which numerous jets of steam can be projected among the tubes in order to sweep away the dust and ashes, when required. This boiler, for steamships, has been held to be superior to all that has preceded it.

Long before the Earl of Dundonald patented his boiler, tubular boilers were employed in Britain, but this does not appear to be generally known among our engineers. In 1829, James and William Napier, Engineers in Glasgow, Scotland, took out a patent for an improvement in tubular boilers for steamboats, the following claim of which patent deserves attention, as many suppose that the application of tubular boilers on steamships is of recent origin:—

"What we claim is a reservoir or chamber, into which the flue or flues coming from the furnace or furnaces terminate, and from which reservoir or chamber another set or number of flues commence, and return through the boiler into the chimney or outlet at furnace end of boiler."

In marine boilers made according to this patent, the furnaces are made in the usual form within the boiler; and each furnace is continued by a separate flue to nearly the after-end, where it terminates in a chamber which reaches across from outside to outside to the flues on opposite sides of the boiler. This chamber ascends to such a height above the furnaces, as to admit of the insertion of a series of returning tubes, varying in number, length, and diameter, according to the conditions of the case. The returned end of the tubes terminate in what may be called a smoke-box, at the front of the boiler, and over which the chimney is placed. The chamber at the after-end of the boiler as in the common construction of tubular boilers, so that the arrangement is not affected by variation of temperature and consequent expansion, in the external and internal parts.

The distinguishing principle of the boiler—as compared with the locomotive boiler—seems to be a much greater space for the process of combustion.

Floating Logs in a Tunnel.

In your paper of March 6th, I observed a communication about "a new form of overcoming resistance," made use of in Vermont; it may be new in that State, but has been in use in Maine over twenty-five years, and has been the means of transporting thousands of mill logs over rapids in rivers and in small streams where there was not sufficient water to float a log otherwise. In many cases they were made so as to conform to the shape of logs and thus save water, and a very small stream answered every purpose. Mr. Cochrane is not the original inventor, as many can testify. There has been one in operation in Bridgeton, Maine, for a long time, which would not only transport railroad ties, but mill logs that would yield over 1000 feet of board, for miles. Let honor be bestowed where honor is due. M. C. H.

Savannah, Ga., March, 1852.

Trials of Anchors.

The committee of British naval officers and ship owners selected to test the relative properties and merits of ships' anchors, having, at a preliminary meeting held at Sheerness come to the following resolutions, the same are made known for the information of all parties who may be desirous of having anchors tested:—1. That the trials be open to anchors of all nations. 2. That the weight of the anchors for these trials be 25 cwt., including stock. 3. That every anchor previously to being allowed to enter into competition must be tested at Woolwich. 4. That the anchors be landed at Woolwich for testing by the 1st of May next, at Sheerness by the 1st of June, and the trials to commence on the 1st of July next. 5. That the committee will not hold themselves responsible for any loss or damage that may be sustained by the anchors, nor be liable for any expense in bringing them to or taking them from Sheerness.

The anchors of any other nation but England have but very sorry encouragement to enter the lists.

LITERARY NOTICES.

SOUTHERN CULTIVATOR—This able monthly Agricultural paper, published at Augusta, Ga., by the Editor, Dr. Lee, assisted by Mr. Remond, we are glad to see once more on our table, after the fire which recently destroyed their printing establishment.—The Southern Cultivator is a most able periodical. Dr. Lee is an excellent chemist—the Cultivator bears evidence of this, and he understands what it is to practice and teach agriculture.

PHOTOGRAPHIC ART JOURNAL—The March number of this journal we have received; it is a very good one and contains many excellent articles. We should be very happy to notice this work from time to time, as it is devoted to a very beautiful branch of art, but we cannot do so, as we have not been made aware of its having, hitherto, a monthly existence—we have sometimes received a stray number. If the publisher does not send it regularly he may keep it.

PITTS VS. LAWYERS—We have received from John W. Pitts, of Newborn, Ga., a pamphlet of 48 pages, against lawyer lesigislation and fees at the bar, for the benefit of the people, price 12 1-2 cents. The author evinces genius and discrimination, and has doubtless suffered by the profession. If "he speaks as a man having authority," it is worth something, because experimental knowledge is valuable as a guide-board to straying humanity. Accoiding to the statements made, the laws of Georgia are different from ours in regard to the collection of debts—and we are glad we have no occasion to invoke their protection—in this particular.

GRAHAM'S MAGAZINE, for April. contains 112 pages; the embellishments are numerous and well executed upon steel and wood G. P. R. James, Milner, Hosmer, Bremer, Herbert, and other well-known authors are among the regular contributors to this popular magazine. Dewitt & Davenport, Agents, Tribune Buildings.

GODEY'S LADIES' BOOK, for April, is received from Messrs. H. Long & Bro., 43 Ann st.—The first engraving represents James Watt, when he first conceived the Steam Engine. A full description is given of him and his improvements in the Engine, illustrated by numerous engravings. "The Old Farm Gate" is a spirited picture. The number has excellent contributions frem well-known authors, and is interesting throughout.

SARTAIN'S MAGAZINE, for April, contains several spirited engravings: "The Magic Lake," "Cromwell before the Battle of Dunbar," and others of less note. The reading presents a great and interesting variety from authors of standing reputation. Dewitt & Davenport, Agents, New York.

PETERSON'S LADIES' NATIONAL, for April, contains four full page embellishments, and is choicely supplied with the reading matter. Mrs. Stephens, Dana, Coe, and others, are among the contributors. Dewitt & Davenport.

"A STORY WITHOUT A NAME," is the title of a new novel by G. P. R. James, just issued by Stringer & Townsend; price 37 1-2 cents. As Mr. James is an author of high reputation, we take it for granted the story has a meaning if it has no name.

We have received a copy of "The Swamp Steed or, the Days of Marion and his Merry Men;" the incidents therein related are of a most interesting character. Price 50 cts. Dewitt & Davenport.

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N. B.—The public are particularly warned against paying money to Travelling Agents, as none are accredited from this office. The only safe way to obtain a paper is to remit to the publishers.

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